

1990 ESCORT



**Electrical &
Vacuum
Trouble-
Shooting
Manual**

ELECTRICAL AND VACUUM TROUBLESHOOTING MANUAL

FPS-12117-90

FORD PARTS and SERVICE DIVISION

Quality is Job 1

For customer satisfaction, Ford Parts and Service Division has developed an EVTM for the 1990 model year. The EVTM is directed to you—the technician. Our goal is to provide accurate and timely service information for product maintenance.

1990 EVTM FEATURES

- A "How to Use This Manual" section that orients the user to the manual and its use.
- **Electrical Schematics** categorized by system and circuit.
- "How the Circuit Works" descriptions that explain how each circuit works. These descriptions are designed to be used in conjunction with the Electrical Schematic.
- **Component Location** information that tells where each component is located on the car as well as a reference to a **Component Location View**.
- **Troubleshooting Hints** presented in a "condition-cause-action" format.
- **Component Testing Procedures** that tell the user how to perform diagnostic tests on various circuits.
- **Connector End Views** designed to help with troubleshooting.
- **Notes, Cautions, and Warnings** that contain important safety information.
- **Component Base Part Numbers** and **Harness Base Part Numbers** to aid in ordering parts.
- **Cellular pagination** to assist in locating systems for easier referencing.
- **Expanded Contents/Index** to help with the EVTM System Location.

ORDERING INFORMATION

Information about how to order additional copies of this publication or other Ford publications may be obtained by writing to Helm Incorporated at the address shown below or by calling 1-800-782-4356. Other publications available include:

- Shop Manuals
- Service Specification Books
- Car/Truck Wiring Diagrams
- Engine/Emissions Diagnosis Manuals

Helm Incorporated
P.O. Box 87150
Detroit, Michigan 48207

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IMPORTANT SAFETY NOTICE

Appropriate service methods and proper repair procedures are essential for the safe, reliable operation of all motor vehicles, as well as the personal safety of the individual doing the work. This Manual provides general directions for accomplishing service and repair work with tested, effective techniques. Following them will help assure reliability.

There are numerous variations in procedures, techniques, tools, and parts for servicing vehicles, as well as in the skill of the individual doing the work. This Manual cannot possibly anticipate all such variations and provide advice or cautions as to each. Accordingly, anyone who departs from the instructions provided in this Manual must first establish that he compromises neither his personal safety nor the vehicle integrity by his choice of methods, tools or parts.

2-1 HOW TO USE THIS MANUAL

The purpose of this manual is to show electrical and vacuum circuits of these vehicles in a clear and simple fashion to make troubleshooting easier. With each circuit is a description of *How the Circuit Works* and some *Troubleshooting Hints*. A Component Location chart lists components and references to pictures in the manual.

Notes, Cautions and Warnings containing important information appear in boxes on text pages. Notes provide additional information to help complete a particular procedure. Cautions provide information that could prevent making an error that could damage the vehicle. Warnings provide information to prevent personal injury. The warnings list on the previous page contains general warnings to follow when working on a vehicle.

Components which work together are shown together. For example, all electrical components used in any circuit are shown on one diagram. The circuit breaker or fuse is shown at the top of the page. All wires, connectors, splices, switches, and motors are shown in the flow of current to ground at the bottom of the page. Notes are included which describe how switches and other components work. If a component is used in several different circuits, it is shown in several places.

For example, the Main Light Switch is an electrical part of many circuits and is repeated on many pages. In some cases, however, a component may seem (by its name) to belong on a page where it has no electrical connection. For example, Radio Illumination is electrically part of instrument illumination., but because it has no electrical connection at all with the actual Radio circuit, it is not shown on the Radio page.

Troubleshooting Hints point the technician in a general direction, but are not intended as a step-by-step procedure. Ignition troubleshooting is an exception to this. It includes a step-by-step procedure of basic quick checks to locate some of the more common Ignition System problems. Reading the Shop Manual provides more detailed repair procedures.

Connector end views of switches and other components are shown in Cell 149 (beginning on page 149-1) to help with bench testing. The views show the harness wire colors that connect to the mating terminals. Connector colors and locations are shown in the *Location Index* chart. Two-color listings indicate separate colors for each connector half.

A Location Index in Cell 152 (beginning on page 152-1) identifies individual components, connectors, and splices. This index describes the component, connector, or splice location and directs you to the component illustrations. In addition, the component base part number has been included for your convenience in ordering parts. A list of harness base numbers, harness names and major systems associated with the respective harness base part number is also included within the Location Index.

The Grounds pages show detailed views of multiple component ground points. This is useful for checking interconnections among the ground circuits of different diagrams.

Component Connectors with more than 5 cavities are shown in Cell 150 (Beginning on page 150-1) to help with system troubleshooting. Any component connector with 5-9 cavities will be shown with a connector end

view of the connector. A component with 10 or more connector cavities will have a pinout chart in addition to the connector face. The pinout chart contains information such as cavity number, wire number and color, and circuit function.

Resistors and Diodes are currently covered with PVC molds and are taped to the harness outside the tubing. Many of the resistor and diode assemblies will be covered with heat shrinkable tubing making the assembly small enough to be placed within the harness bundle. The wiring diagrams show the number of times the resistors and diodes are used. The wiring diagrams also show the distance from connector/length of wire in exact centimeters. Resistors and diodes are identified on the wiring diagrams by the following base part numbers

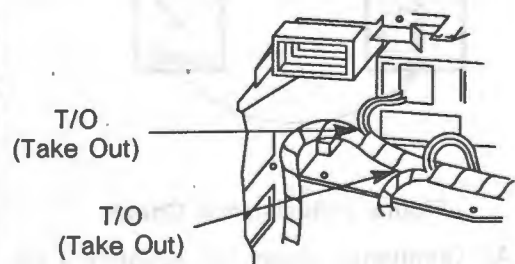
Resistor/diode assembly	14A601
Diode only	14A604

We welcome your comments on the feedback sheet found at the back of this manual. The information submitted on this sheet will improve future editions.

Before using the EVTM for troubleshooting, refer to the HELPFUL REMINDERS described on this page.

1. The abbreviation T/O, for take out, used in the Component Location Chart, refers to the point at which a harness branches to feed a component. Refer to the wiring harness illustration.

Wiring harness at back of Instrument Panel, showing typical T/O (Take Out) locations



2. If a connector serves the same purpose in two separate versions (e.g., EFI/Carb), but is physically different, two connector numbers are used. However, if a connector serves the same purpose in two separate versions (e.g., EFI/Carb) and is physically the same, but the wire colors are different, only *one* connector number is used. If the same physical connector is used more than once, then more than *one* connector number is used.

3. Wiring diagrams provide a schematic picture of how and under what conditions the circuit is powered, of the current path to circuit components, and of how a circuit is grounded. Each circuit component is named (underlined titles). Wire and connector colors are listed (standard Ford color abbreviations are used):

COLOR ABBREVIATIONS

BL	Blue	N	Natural
BK	Black	O	Orange
BR	Brown	PK	Pink
DB	Dark Blue	P	Purple
DG	Dark Green	R	Red
GR	Green	T	Tan
GY	Gray	W	White
LB	Light Blue	Y	Yellow
LG	Light Green		

Whenever a wire is labeled with two colors, the first color listed is the basic color of the wire, and the second color listed is the stripe marking of the wire.

4. When reporting Vehicle Repair Location Codes to Ford Parts and Service Division, refer to Cell 160 (Beginning on page 160-1).

Note: Do *not* use the illustrations in Cell 151 (beginning on page 151-1) for reporting Vehicle Repair Location Codes.

5. WARNINGS

- Always wear safety glasses for eye protection.
- Use safety stands whenever a procedure requires being under a vehicle.
- Be sure that the Ignition Switch is always in the OFF position, unless otherwise required by the procedure.
- Set the parking brake when working on any vehicle. An automatic transmission should be in PARK. A manual transmission should be in NEUTRAL.
- Operate the engine only in a well-ventilated area to avoid danger of carbon monoxide.
- Keep away from moving parts when the engine is running, especially the fan and belts.
- To prevent serious burns, avoid contact with hot metal parts such as the radiator, exhaust manifold, tail pipe, catalytic converter, and muffler.
- Do not allow flame or sparks near the battery. Gases are always present in and around the battery cell. An explosion could occur.
- Do not smoke.
- To avoid injury, always remove rings, watches, loose hanging jewelry, and loose clothing.

4-1 HOW TO FIND THE ELECTRICAL PROBLEM

TROUBLESHOOTING STEPS

These six steps present an orderly method of troubleshooting.

Step 1. Verify the problem.

- Operate the complete system to check the accuracy and completeness of the customer's complaint.

Step 2. Narrow the problem

- Using the EVTM, narrow down the possible causes and locations of the problem to pinpoint the exact cause.
- Read the description of *How the Circuit Works* and study the wiring diagram. You should then know enough about the circuit operation to determine where to check for the trouble. Further information can be found in the Shop Manual pages listed after *How the Circuit Works*.

Step 3. Test the cause.

- Use electrical test procedures to find the specific cause of the symptoms.
- *Troubleshooting Hints* will give you helpful ideas.
- The *Component Location Charts* and the pictures will help you find components. Following each chart, there is a reference to the Location Index at the end of the manual. This index gives component location information for connectors, diodes, resistors, splices and grounds.

Step 4. Verify the cause.

- Confirm that you have found the correct cause by operating the parts of the circuit you suspect are operative.

Step 5. Make the repair.

- Repair or replace the inoperative component.

Step 6. Verify the repair.

- Operate the system as in Step 1 and check that your repair has removed all symptoms without creating any new symptoms.

Some engine circuits may need special test equipment and special procedures. See the *Shop Manual* and other service books for details. You will find these circuits in this manual to be helpful with these special tests.

TROUBLESHOOTING TOOLS

JUMPER WIRE

This is a test lead used to connect two points of a circuit. A Jumper Wire can complete a circuit, bypassing an open.

WARNING

Never use a jumper wire across loads (motors, etc.) connected between hot and ground. This direct battery short may cause injury or fire.

VOLTMETER

A DC Voltmeter measures circuit voltage. Connect negative (- or black) lead to ground, and positive (+ or red) lead to voltage measuring point.

OHMMETER

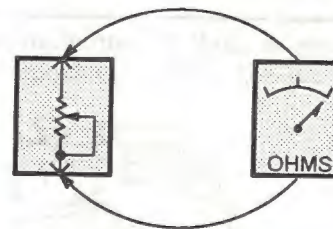


Figure 1-Resistance Check

An Ohmmeter shows the resistance between two connected points (Figure 1).

TEST LAMP

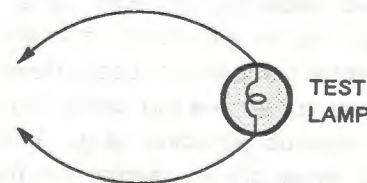


Figure 2-Test Lamp

A Test Light is a 12-volt bulb with two test leads (Figure 2).

Uses: Voltage Check, Short Check

HOW TO FIND THE ELECTRICAL PROBLEM 4-2

SELF-POWERED TEST LAMP

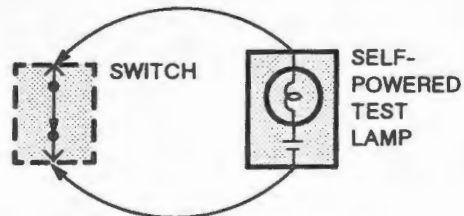


Figure 3—Continuity Check

The Self-Powered Test Lamp is a bulb, battery and set of test leads wired in series (Figure 3). When connected to two points of a continuous circuit, the bulb glows.

Uses: Continuity Check, Ground Check

CAUTION

When using a self-powered test lamp or ohmmeter, be sure power is off in circuit during testing. Hot circuits can cause equipment damage and false readings.

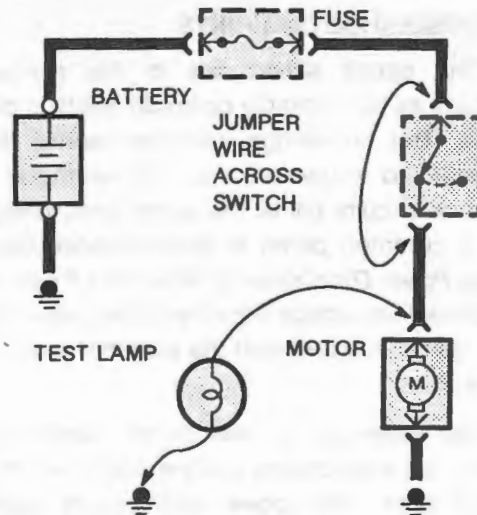


Figure 4—Switch Circuit Check and Voltage Check

In an inoperative circuit with a switch in series with the load, jumper the terminals of the switch to power the load. If jumpering the terminals powers the circuit, the switch is inoperative (Figure 4).

CONTINUITY CHECK (Locating open circuits)

Connect one lead of Self-Powered Test Lamp or Ohmmeter to each end of circuit (Figure 3). Lamp will glow if circuit is closed. Switches and fuses can be checked in the same way.

VOLTAGE CHECK

Connect one lead of test lamp to a known good ground or the negative (-) battery terminal. Test for voltage by touching the other lead to the test point. Bulb goes on when the test point has voltage (Figure 4).

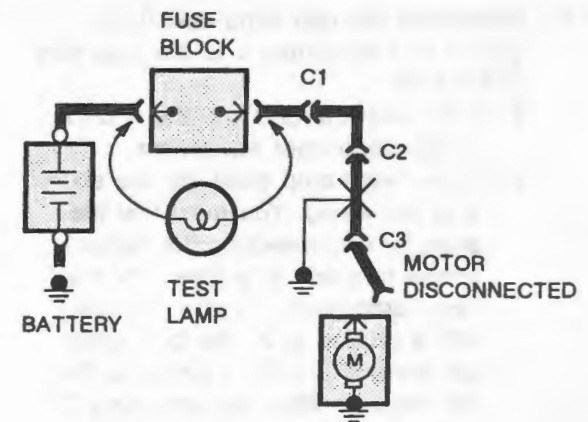


Figure 5—Short Check

A fuse that repeatedly blows is usually caused by a short to ground. It's important to be able to locate such a short quickly (Figure 5).

1. Turn off everything powered through the fuse.
2. Disconnect other loads powered through the fuse:
 - Motors: disconnect motor connector
 - Lights: remove bulbs.
3. Turn Ignition Switch to RUN (if necessary) to power fuse.
4. Connect one Test Lamp lead to hot end of blown fuse. Connect other lead to ground. Bulb should glow, showing power to fuse. (This step is just a check to be sure you have power to the circuit.)

4-3 HOW TO FIND THE ELECTRICAL PROBLEM

5. Disconnect the test lamp lead from ground and reconnect it to the load side of the fuse.
- If the Test Lamp is off, the short is in the disconnect equipment.
 - If the Test Lamp goes on, the short is in the wiring. You must find the short by disconnecting the circuit connectors one at a time until the Test Lamp goes out. For example: with a ground at X, the bulb goes out when C1 or C2 is disconnected, but stays on after disconnecting C3. This means the short is between C2 and C3.

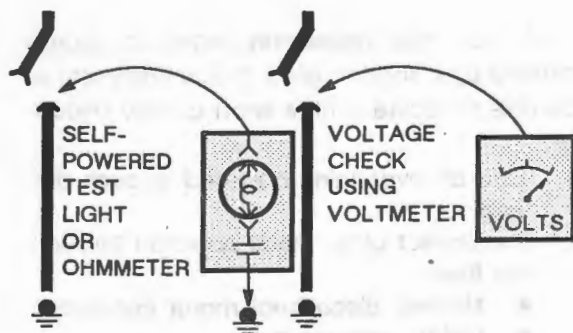


Figure 6—Ground Checks

Turn on power to circuit. Perform Voltage Check between suspected inoperative ground and frame. Any indicated voltage means ground is inoperative.

Turn off power to circuit. Connect one lead of Self-Powered Test Lamp or Ohmmeter to wire in question and the other to known ground. If bulb glows, circuit ground is OK (Figure 6).

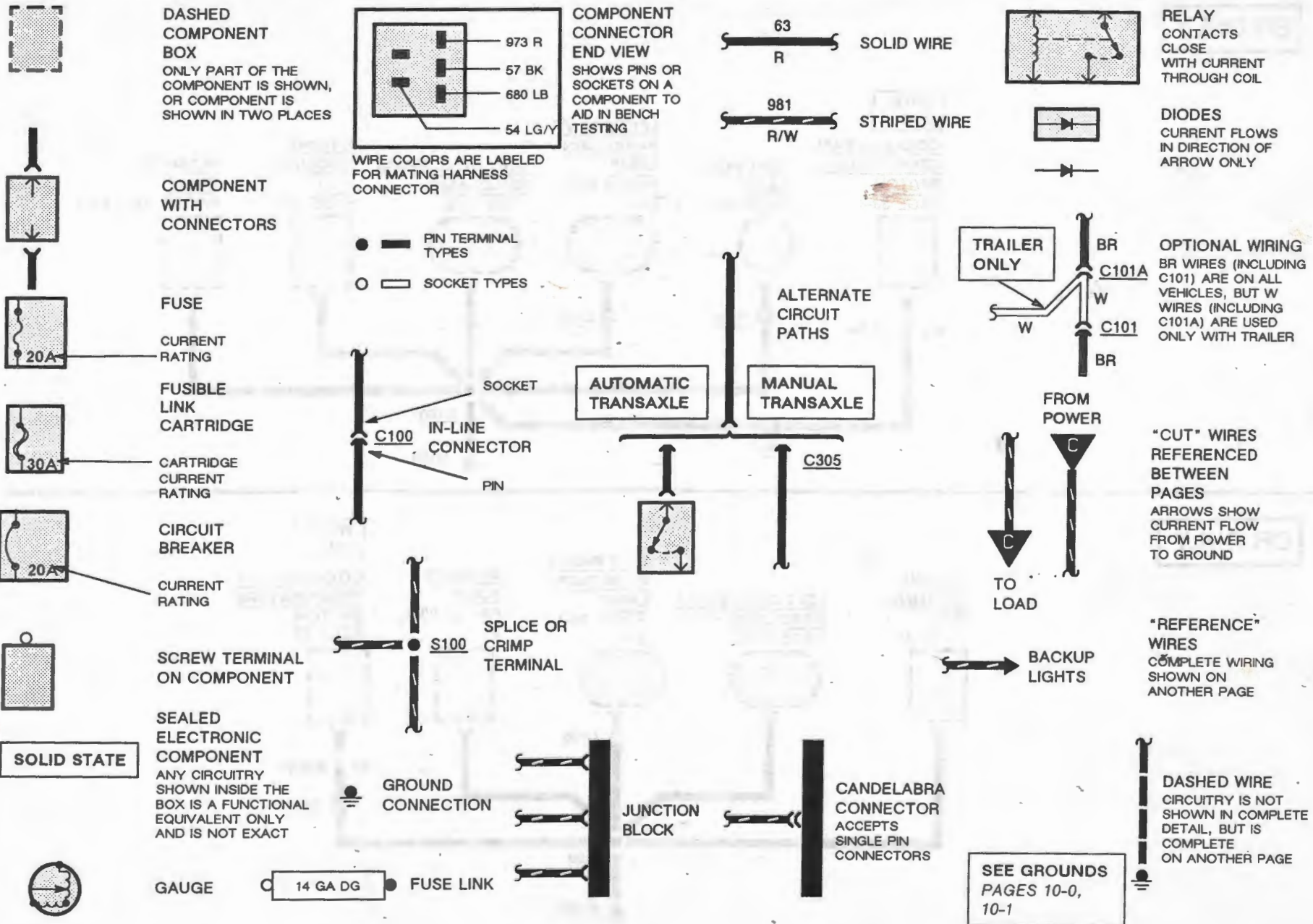
TROUBLESHOOTING HINTS

The circuit schematics in this manual make it easy to identify common points in circuits. This knowledge can help narrow the problem to a specific area. For example, if several circuits fail at the same time, check for a common power or ground connection. (See *Power Distribution* or *Grounds*.) If part of a circuit fails, check the connections between the part that works and the part that doesn't work.

For example, if low beam headlamps work, but high beams and the indicator lamp don't work, then power and ground paths must be good. Since the dimmer switch is the component that switches this power to the high beam lights and indicator, it is most likely the cause of failure.

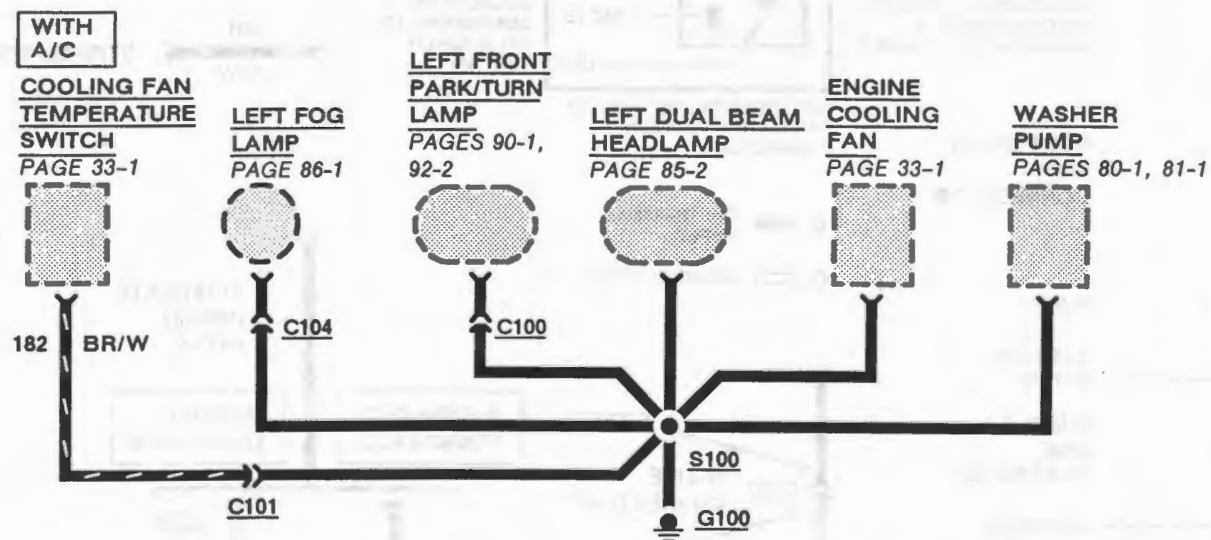
Troubleshooting Hints unique to a particular circuit are given in a new, three column format. Included in the charts are conditions that may develop, possible causes, and one or more tests that can be done quickly to determine the cause of the condition.

ELECTRICAL SYMBOLS 5-1

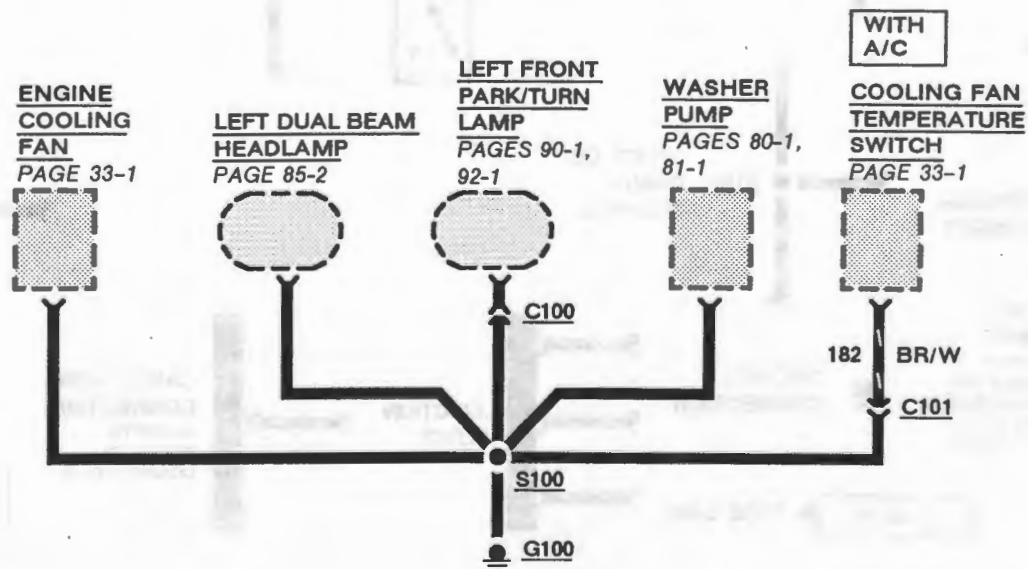


10-1 GROUND (G100)

EFI ONLY

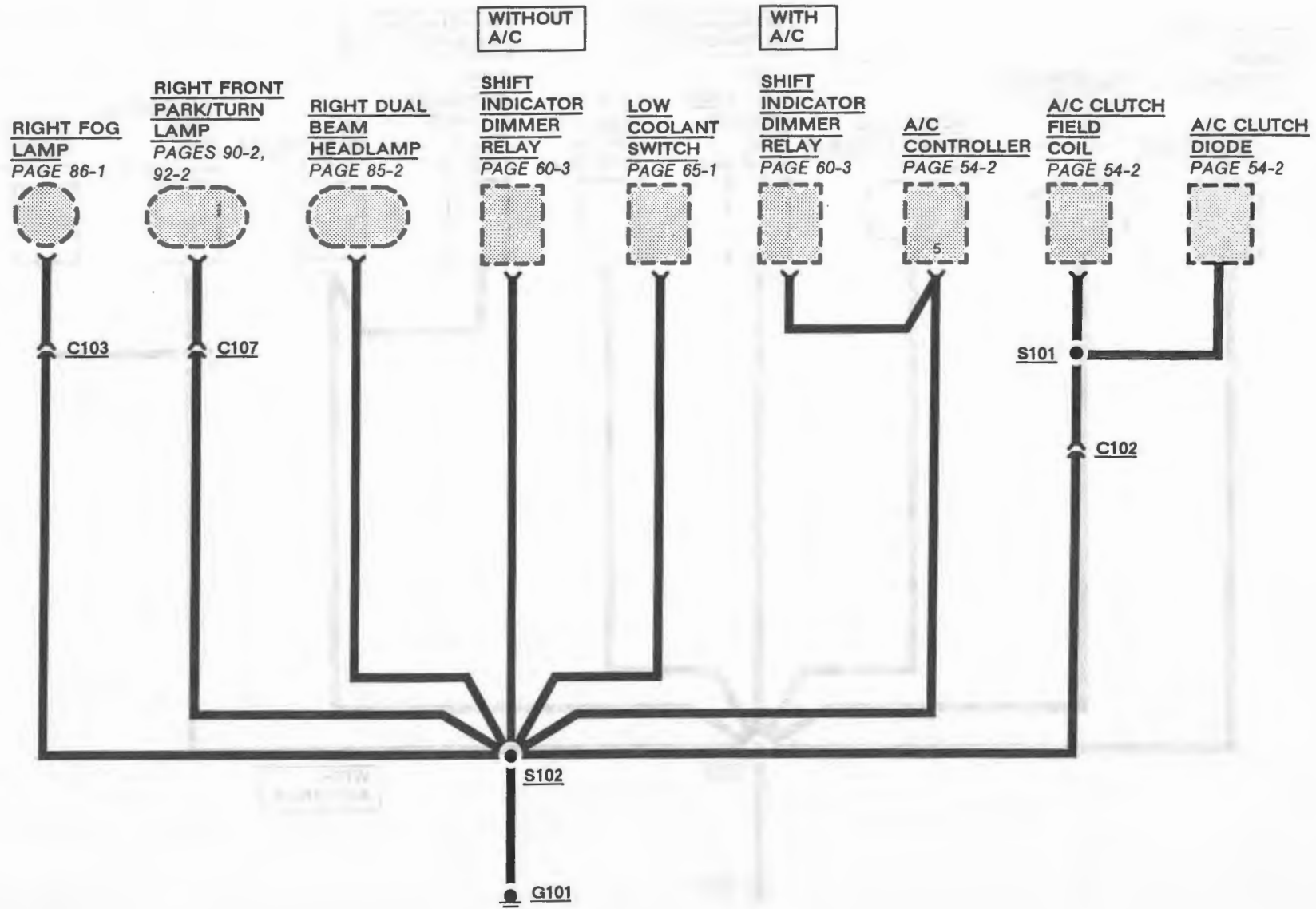


CFI ONLY



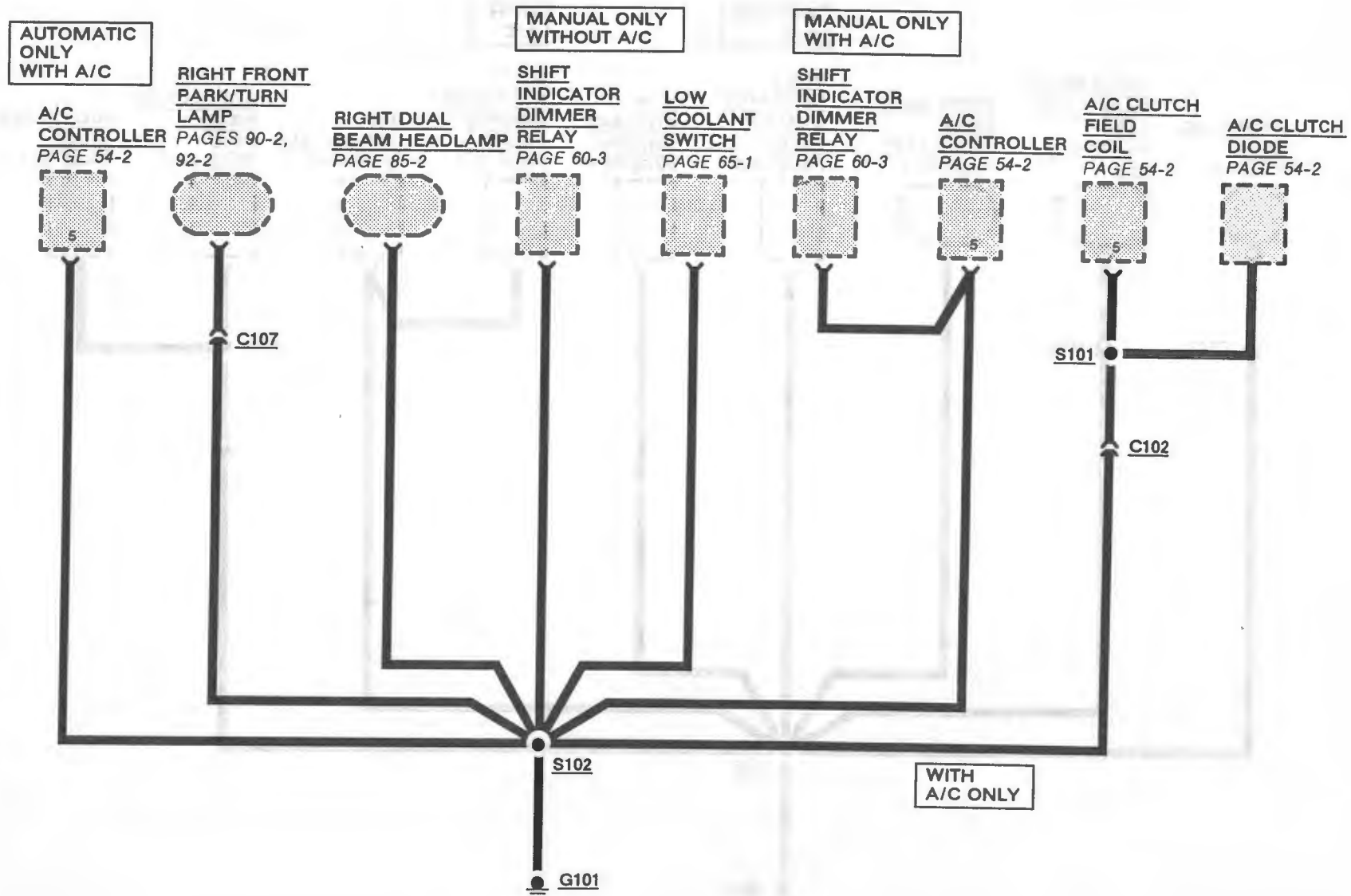
GROUND (G101) 10-2

EFI ONLY

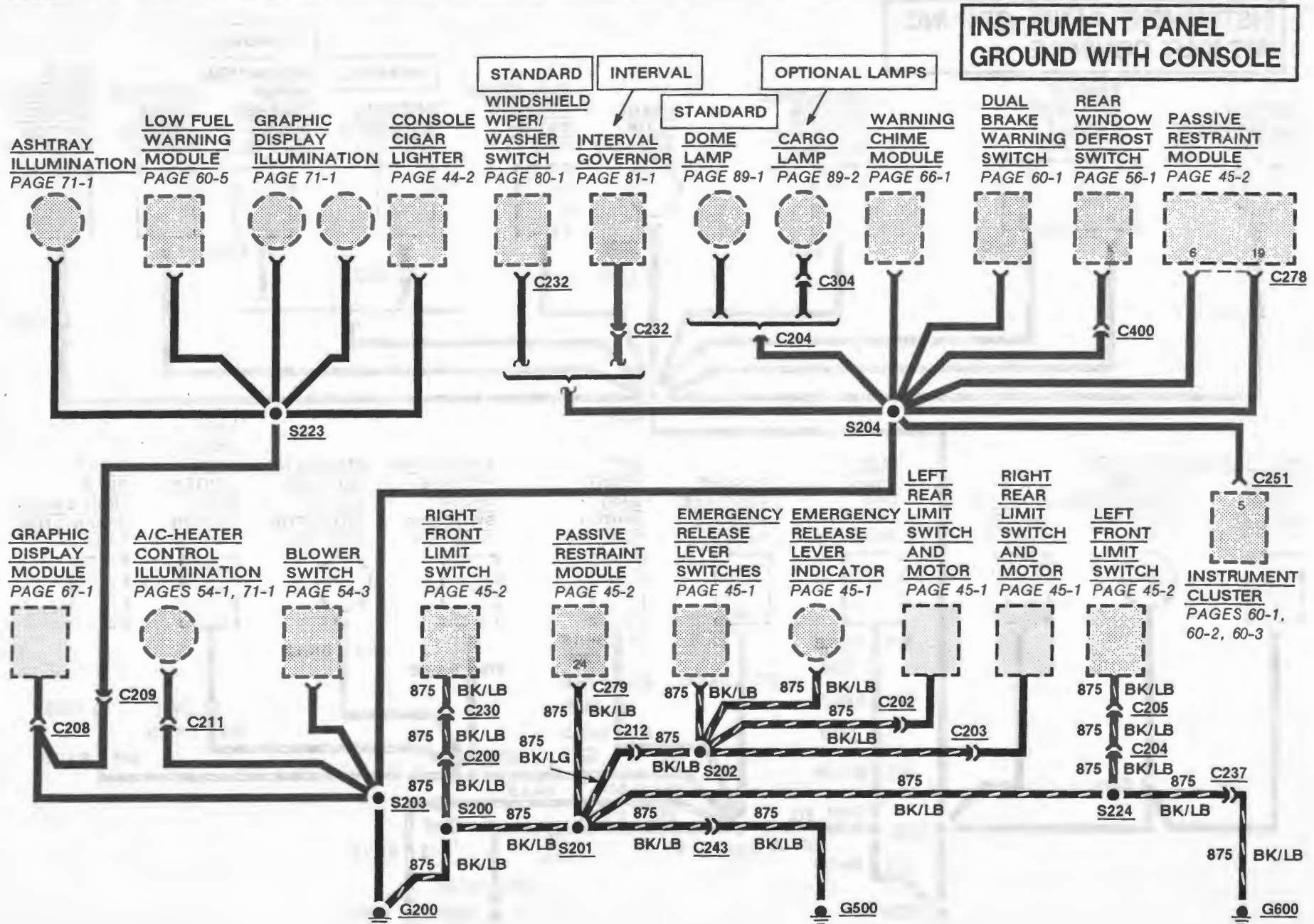


10-3 GROUNDS (G101)

CFI ONLY

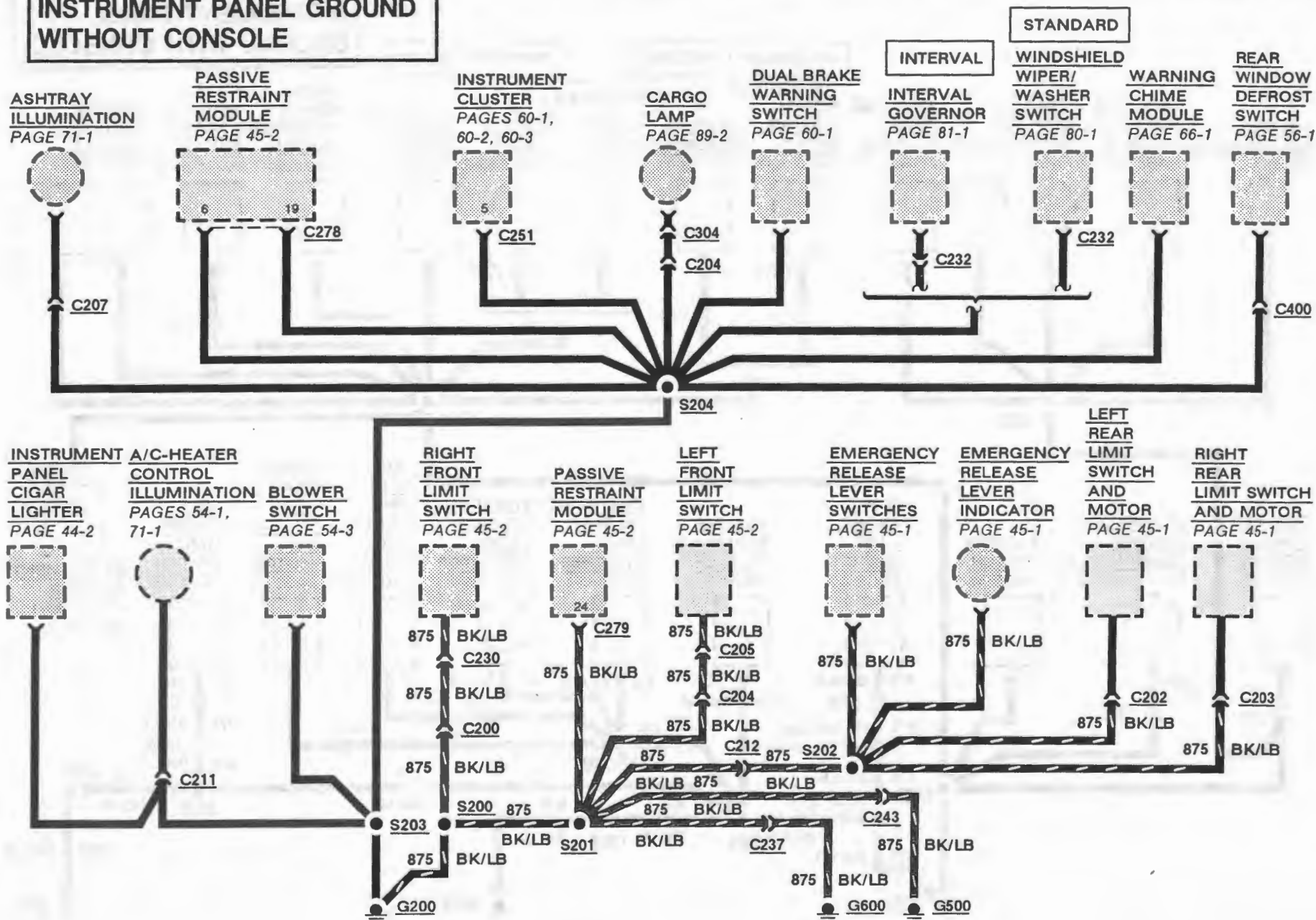


GROUNDING (G200, G500, G600) 10-4



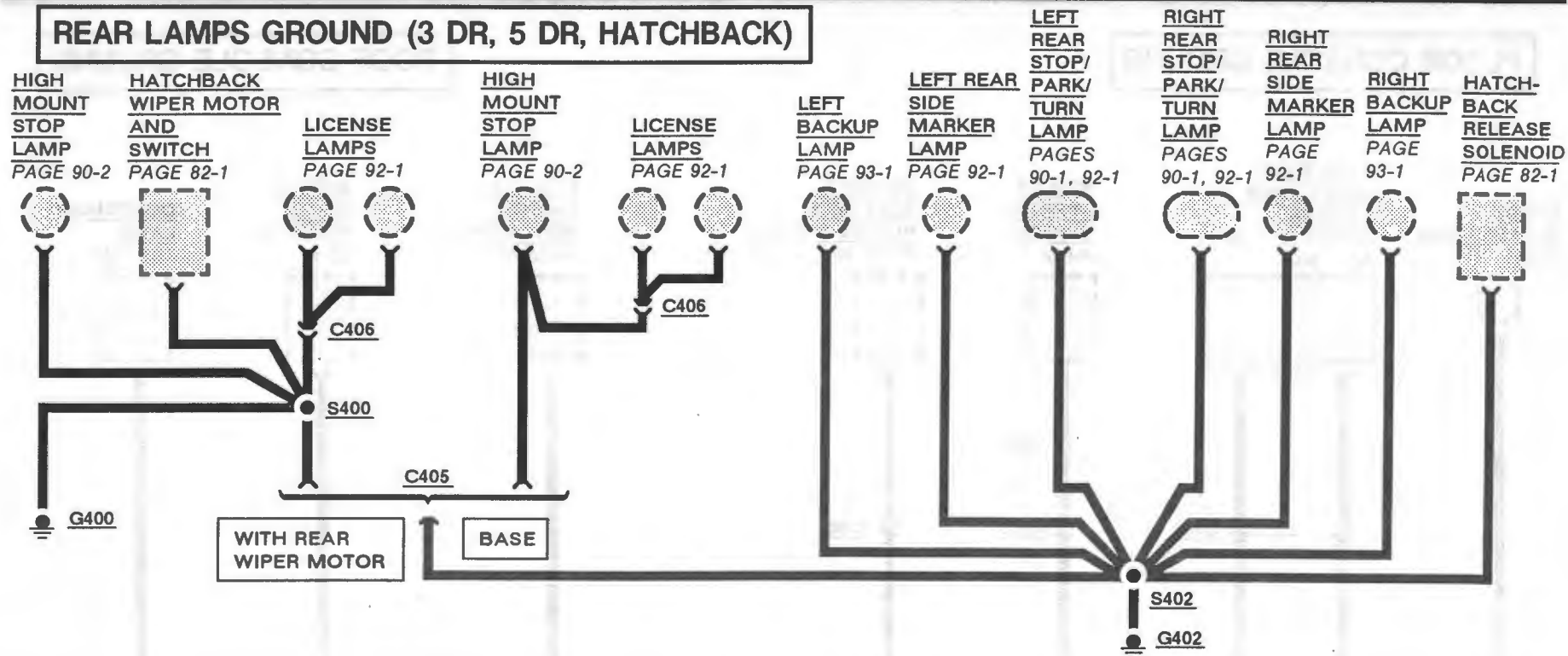
10-5 GROUNDS (G200, G500, G600)

INSTRUMENT PANEL GROUND WITHOUT CONSOLE

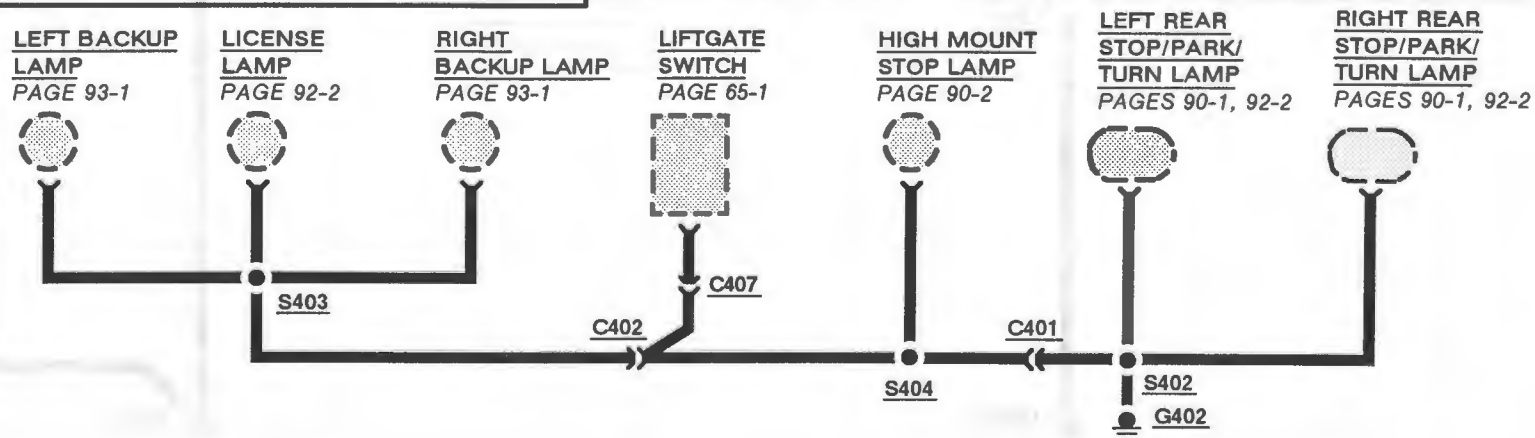


10-7 GROUNDS (G400, G402)

REAR LAMPS GROUND (3 DR, 5 DR, HATCHBACK)



REAR LAMPS GROUND (4 DR LIFTGATE)



HOW THE CIRCUIT WORKS

The ground circuits shown on the preceding pages are complete and connect several components together to screw terminal ground points. Parts of these circuits may be shown on other pages throughout the book. Partial circuits are depicted as broken wires.

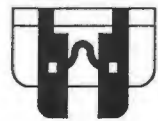
Simple or component ground circuits are shown completely on individual circuit pages.

All wires are 57 BK unless otherwise noted.

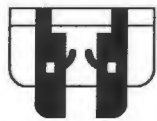
Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

11-1 FUSE PANEL/CIRCUIT PROTECTION

REPLACEMENT OF FUSES/CIRCUIT BREAKERS



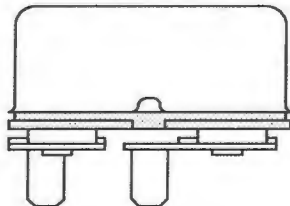
GOOD FUSE



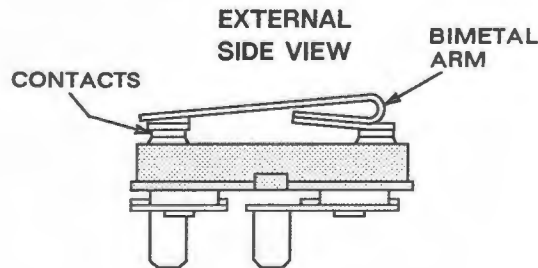
BLOWN FUSE

Fuses are mounted in the Fuse Panel. They are identified by the number rating in amperes. Some positions may have either a fuse or a circuit breaker. Be sure to replace a fuse or circuit breaker with the same kind of unit and ampere rating. Remove fuses to check them.

CIRCUIT BREAKER OPERATION

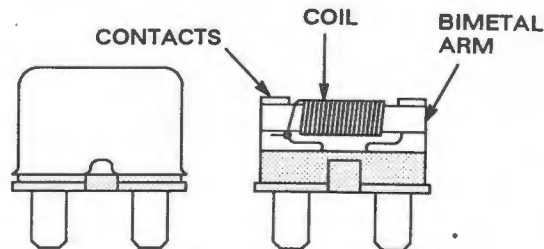


EXTERNAL
SIDE VIEW



INTERNAL
SIDE VIEW

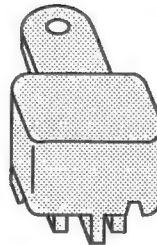
Cycling Fuse Panel Type



EXTERNAL
SIDE VIEW

INTERNAL
SIDE VIEW

Non-Cycling Fuse Panel Type



Cycling In-Line Type

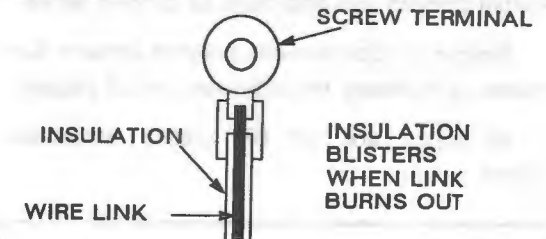
Some circuits are protected by circuit breakers (abbreviated "c.b." in fuse chart). They can be Fuse Panel mounted or in-line. Like fuses, they are rated in amperes.

Each circuit breaker conducts current through an arm made of two types of metal bonded together (bimetal arm). If the arm starts to carry too much current, it heats up. As one metal expands faster than the other, the arm bends, opening the contacts. Current flow is broken. In the cycling type, the arm cools and straightens out. This cycle repeats as long as the overcurrent exists and power is applied.

In the non-cycling type, there is also a coil wrapped around the bimetal arm. When an

overcurrent exists and the contacts open, a small current passes through the coil. This current through the coil is not enough to operate a load, but it does heat up both the coil and the bimetal arm. This keeps the arm in the open position until power is removed.

FUSE LINKS



The fuse link is a short length of wire, smaller in gauge than the wire in the protected circuit. The wire is covered with a thick non-flammable insulation. An overload causes the link to heat and the insulation to blister. If the overload remains, the link will melt, causing an open circuit. The links are usually color coded for wire size as follows:

COLOR CODE

BLUE	20 GA
BROWN	18 GA
BLACK	16 GA
GREEN	14 GA
GRAY	12 GA

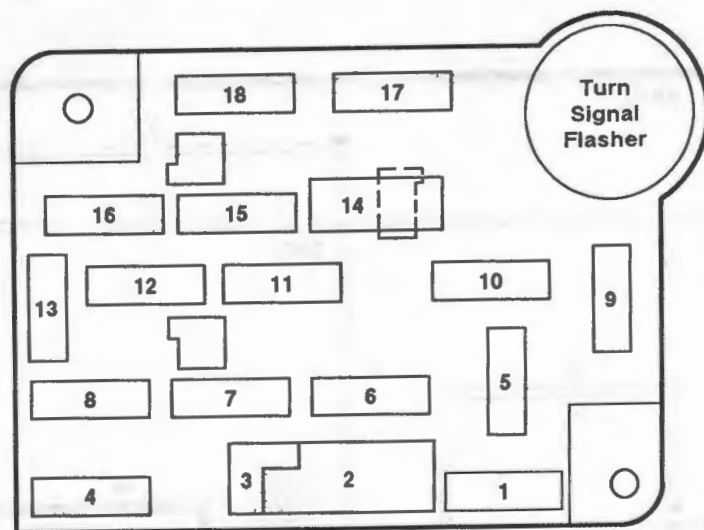
When replacing fuse links, make tight crimp joints or hot solder joints for good connections.

DIODES



Diodes are electrical devices that permit current to flow in one direction only. The current flows in the direction indicated by the arrow.

FUSE PANEL/CIRCUIT PROTECTION 11-2



Fuse Value Amps	Color Code
4	Pink
5	Tan
10	Red
15	Light Blue
20	Yellow
25	Natural
30	Light Green

Power Distribution

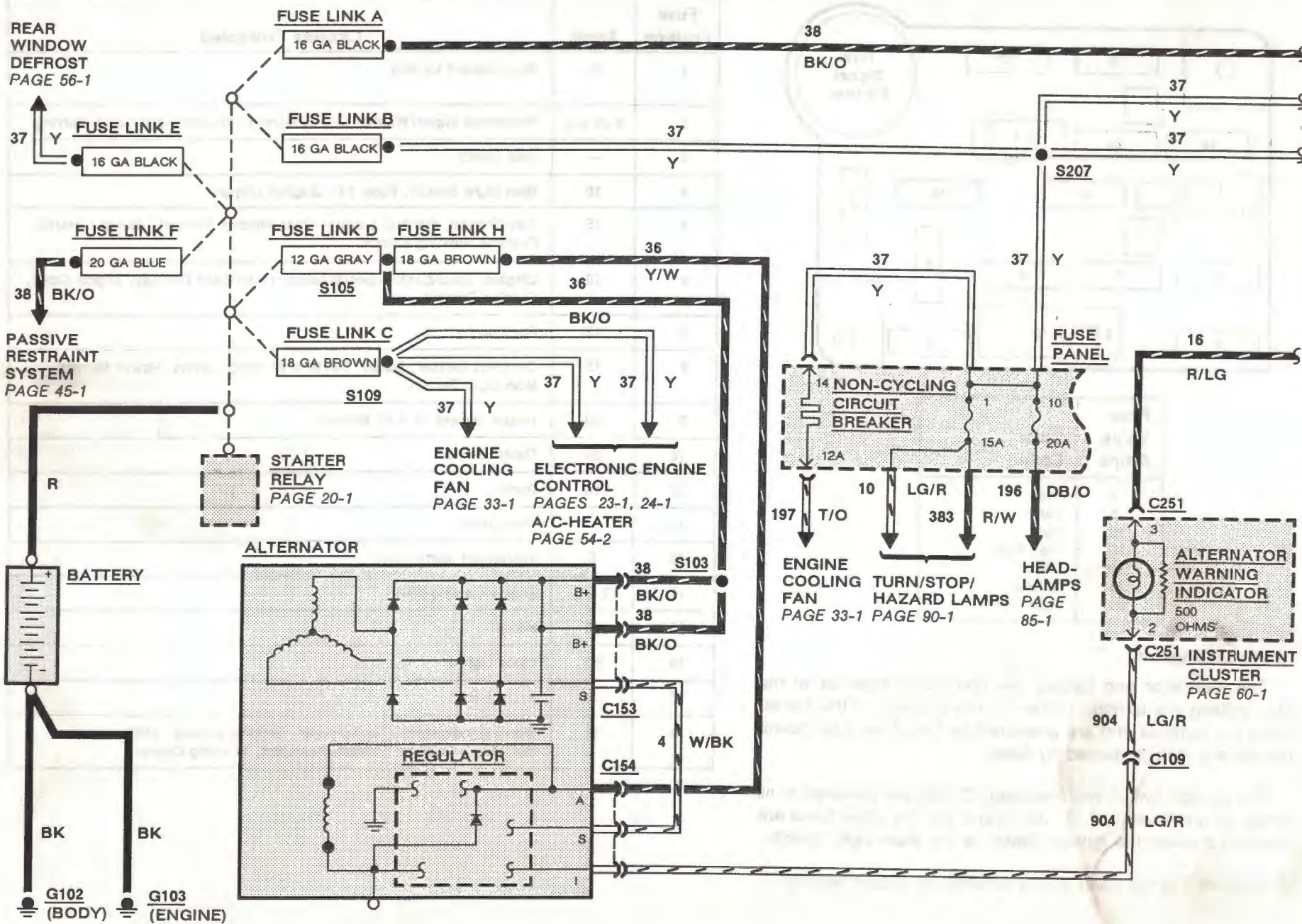
The Alternator and Battery are connected together at the Starter Relay hot terminal. Other circuits originate at the Starter Relay hot terminal and are protected by fuse links. Low power circuits are also protected by fuses.

The Ignition Switch and Headlamp Switch are powered at all times, as are fuses 1, 4, 8, 10, 14 and 16. The other fuses are powered through the Ignition Switch or the Main Light Switch.

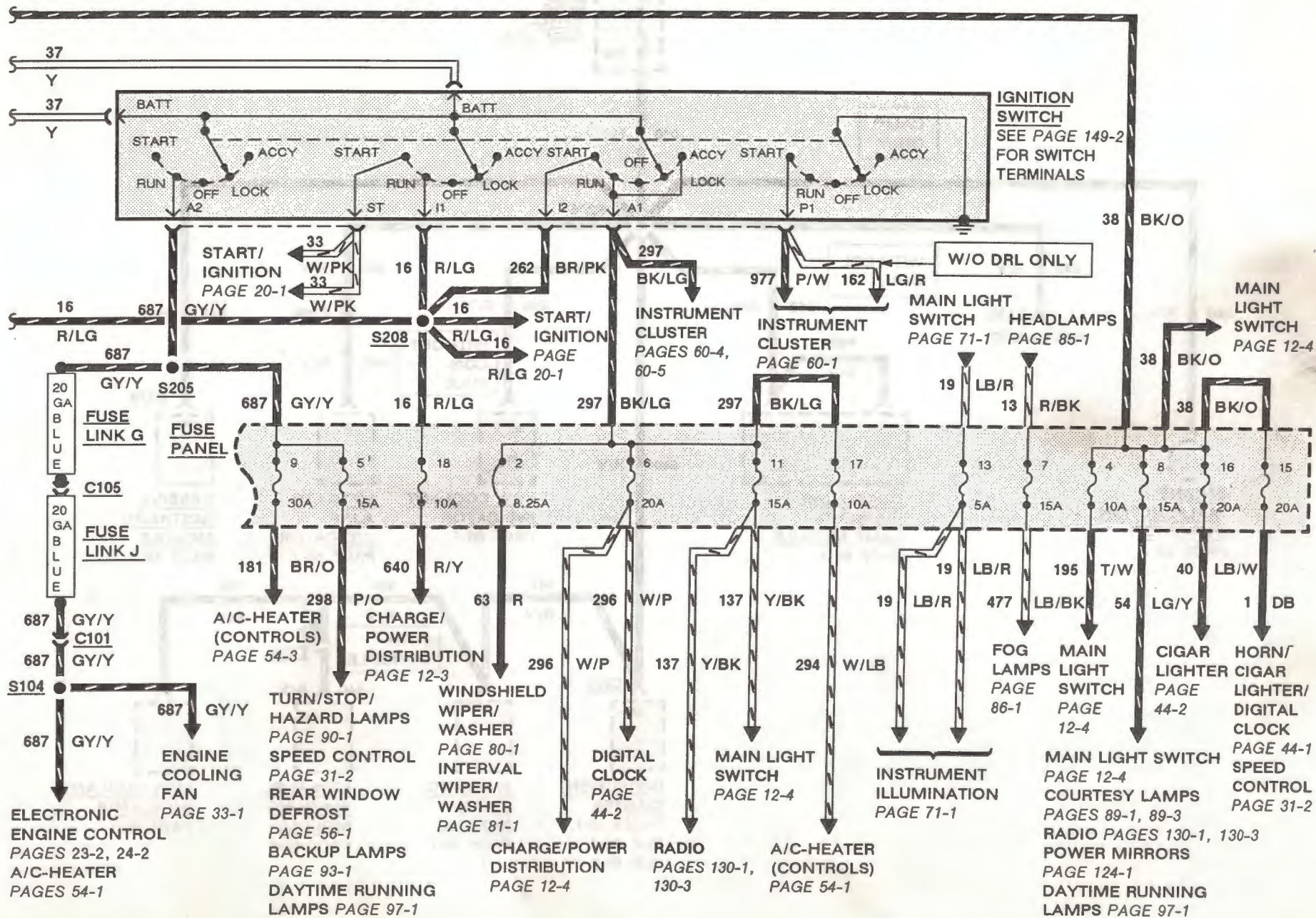
Position 3 is not used and is covered by Circuit Breaker 2.

Fuse Position	Amps	Circuits Protected
1	15	Stop/Hazard Lamps
2	8.25 c.b.	Windshield Wiper/Washer and Governor, Washer Fluid Level Warning
3	—	(Not Used)
4	10	Main Light Switch, Fuse 13, Graphic Display
5	15	Turn Signals, Backup Lamps, Rear Window Defrost, Speed Control, Daytime Running Lamps
6	20	Liftgate/Hatchback/Wiper/Washer, Hatchback Release, Digital Clock, Graphic Display
7	15	Fog Lamps
8	15	Courtesy Lamps, Radio, Daytime Running Lamps, Power Mirrors, Main Light Switch
9	30	Heater Blower or A/C Blower
10	20	Flash-to-pass
11	15	Radio
12	—	(Not Used)
13	5	Instrument Illumination
14	12 c.b.	Engine Cooling Fan
15	20	Horns
16	20	Cigar Lighter
17	10	A/C Clutch
18	10	Warning Indicators, Tachometer, Graphic Display, Shift Indicator, Instrument Cluster, Passive Restraint, Warning Chime

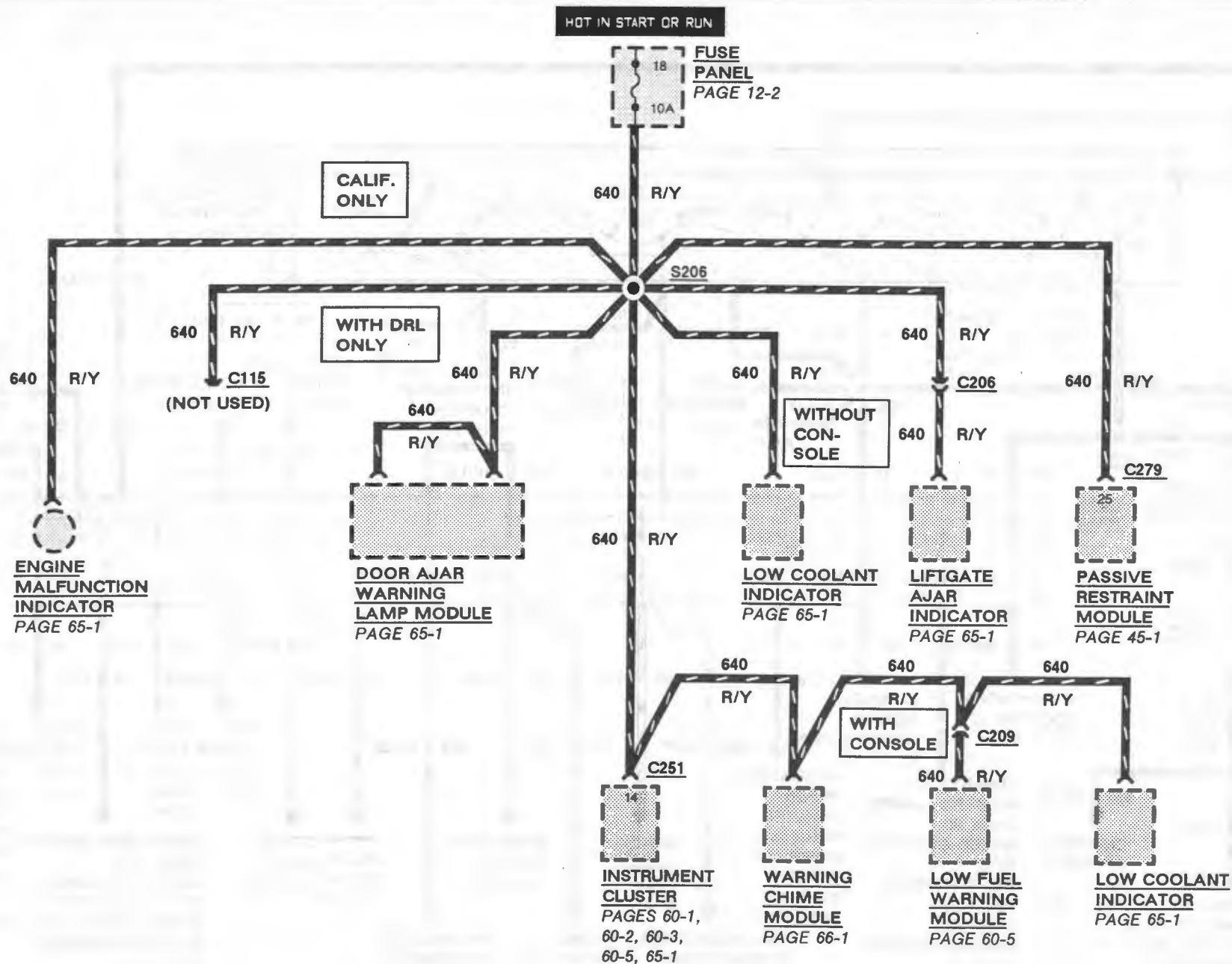
12-1 CHARGE/POWER DISTRIBUTION



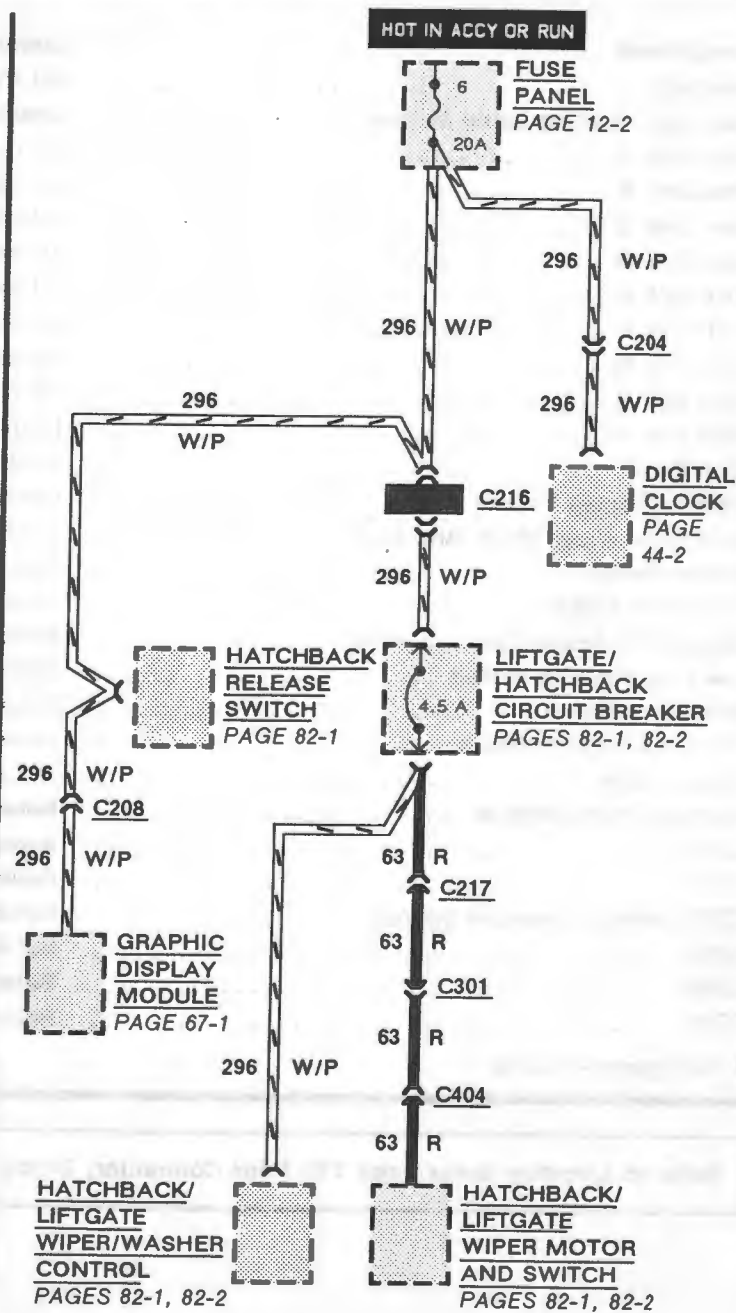
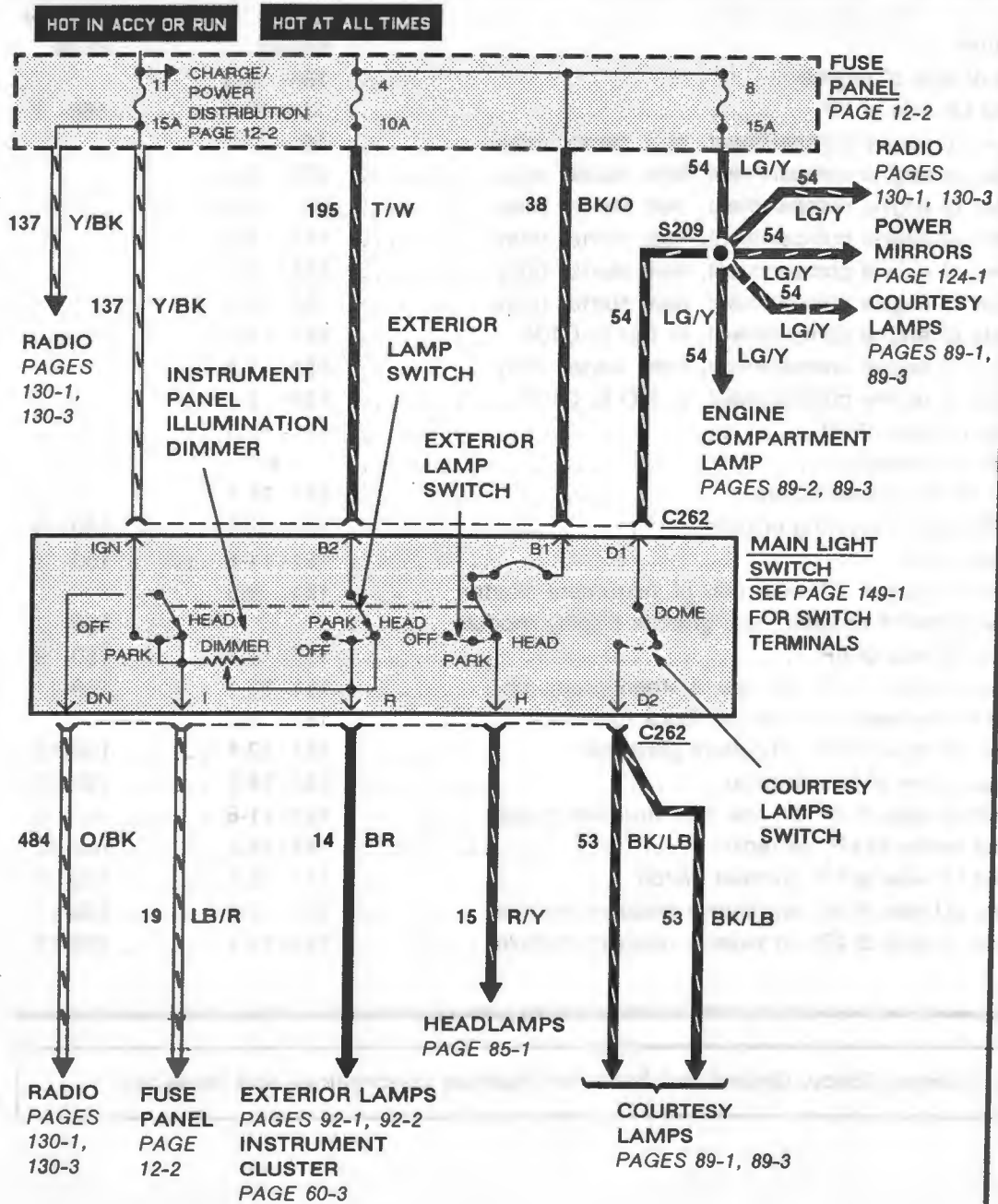
CHARGE/POWER DISTRIBUTION 12-2



12-3 CHARGE/POWER DISTRIBUTION



12-4



12-5 CHARGE/POWER DISTRIBUTION

Component	Location	Page Figure	Connector Page
Alternator	RH front side of engine	151- 4-3	
Door Ajar Warning Lamp Module	Behind LH side of I/P	151- 12-1	150- 2
Fuse Link A	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Link B	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Link C	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Link D	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Link E	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Link F	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Link G	LH side of engine compartment, in T/O to C105	151- 1-1	
Fuse Link H	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Link J	LH rear of engine compartment, in T/O to C105	151- 1-1	
Fuse Panel	Behind LH side of I/P	151- 11-1	
Graphic Display Module	Center of console	*	
Hatchback Wiper Motor And Switch	Inside LH rear of hatchback	151- 21-1	
Ignition Switch	Top RH side of steering column	151- 13-1	150- 9
Instrument Cluster	LH side of I/P	151- 11-6	150- 8
Liftgate/Hatchback Circuit Breaker	Behind LH side of I/P, near rear of instrument cluster	151- 8-3	
Low Fuel Warning Module	Below center of console, near graphic display module		150- 7
Main Light Switch	Behind LH side of I/P	151- 8-3	150- 9
Passive Restraint Module	Behind LH side of I/P, RH side of steering column	151- 12-1	150-11
Starter Relay	At LH fender apron, in front of shock tower	151- 1-1	
Warning Chime Module	Behind RH side of I/P, LH side of glove box	151- 12-1	150-16
C240	Behind center of I/P, on radio	151- 14-2	150-13
C251	Behind LH side of I/P, on rear of instrument cluster	151- 11-6	150- 8
C257 (without Premium Sound)	Behind center of I/P, on radio	151- 14-2	150-12
C262	Behind LH side of I/P, on main switch	151- 8-3	150- 9
C278	Behind LH side of I/P, on passive restraint module	151- 12-1	150-11
C279	Behind LH side of I/P, on passive restraint module	151- 12-1	150-11

* No Figure Available

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

The Alternator is belt driven by the engine. Field current is supplied by the Alternator Regulator, mounted on the rear of the Alternator, through two brushes and two slip rings.

The Alternator produces power in the form of alternating current. The alternating current is rectified to direct current by six diodes. The Alternator Regulator automatically adjusts the alternator field current to maintain the alternator output voltage within prescribed limits to correctly charge the Battery. The Alternator is self-current limiting.

The Regulator voltage control circuit is turned on when the Ignition Switch is in the RUN position. This allows voltage to be applied to Regulator terminal I through a resistor in parallel with the Alternator Warning Indicator. When the Ignition Switch is OFF, the control circuit is turned off and no field current flows to the Alternator.

The Alternator Warning Indicator is connected across the terminals of a 500 ohm resistor at the Instrument Cluster. Current passes through the Alternator Warning Indicator when the Ignition Switch is in the RUN position and there is no voltage at terminal S. When voltage at S rises to a pre-set value, the Regulator switching circuits stop the flow of current into terminal I, and the indicator turns OFF.

System voltage is sensed at Regulator terminal A. The Regulator switching circuits will turn the warning indicator on to indicate a system fault if terminal A voltage is excessively

high or low or if the voltage at terminal S is below a pre-set value.

All models include a fuse link in the Charging System. The fuse link prevents damage to the wiring harness and Alternator if the wiring harness should become grounded or if a booster battery is connected to the Charging System.

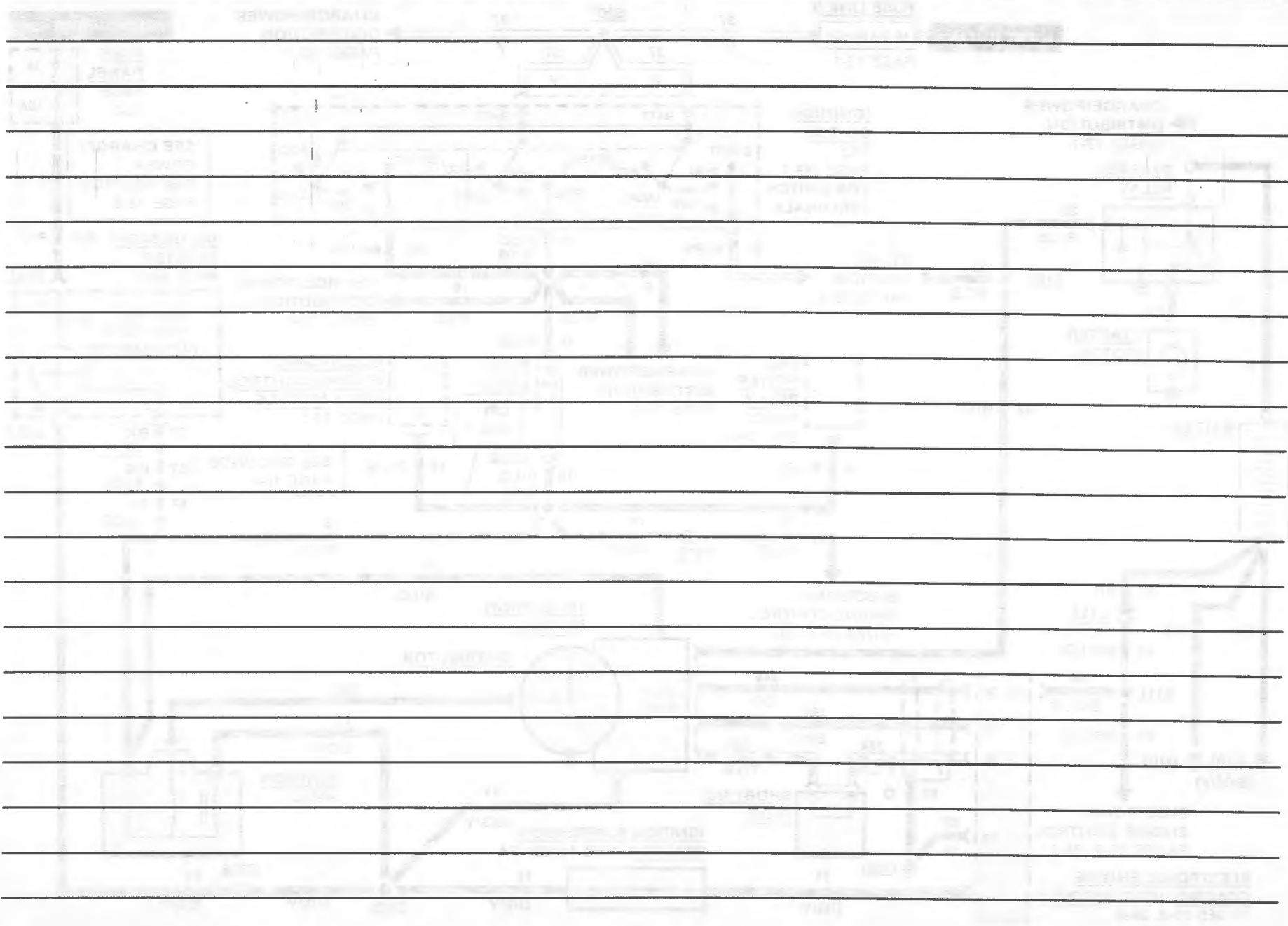
For further diagnostic information, refer to section 31-01 of the shop manual.

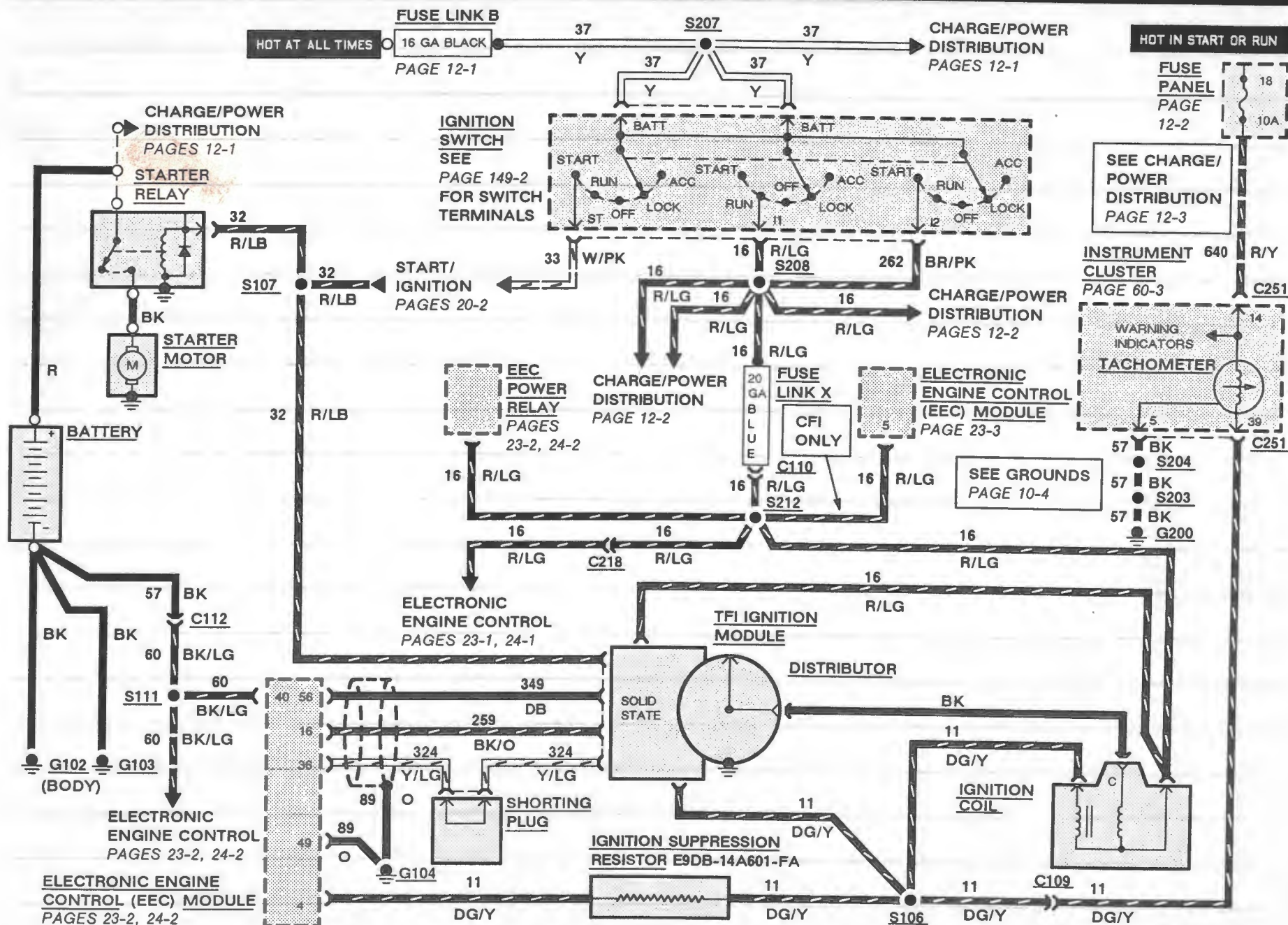
12-7 CHARGE/ POWER DISTRIBUTION

TROUBLESHOOTING HINTS

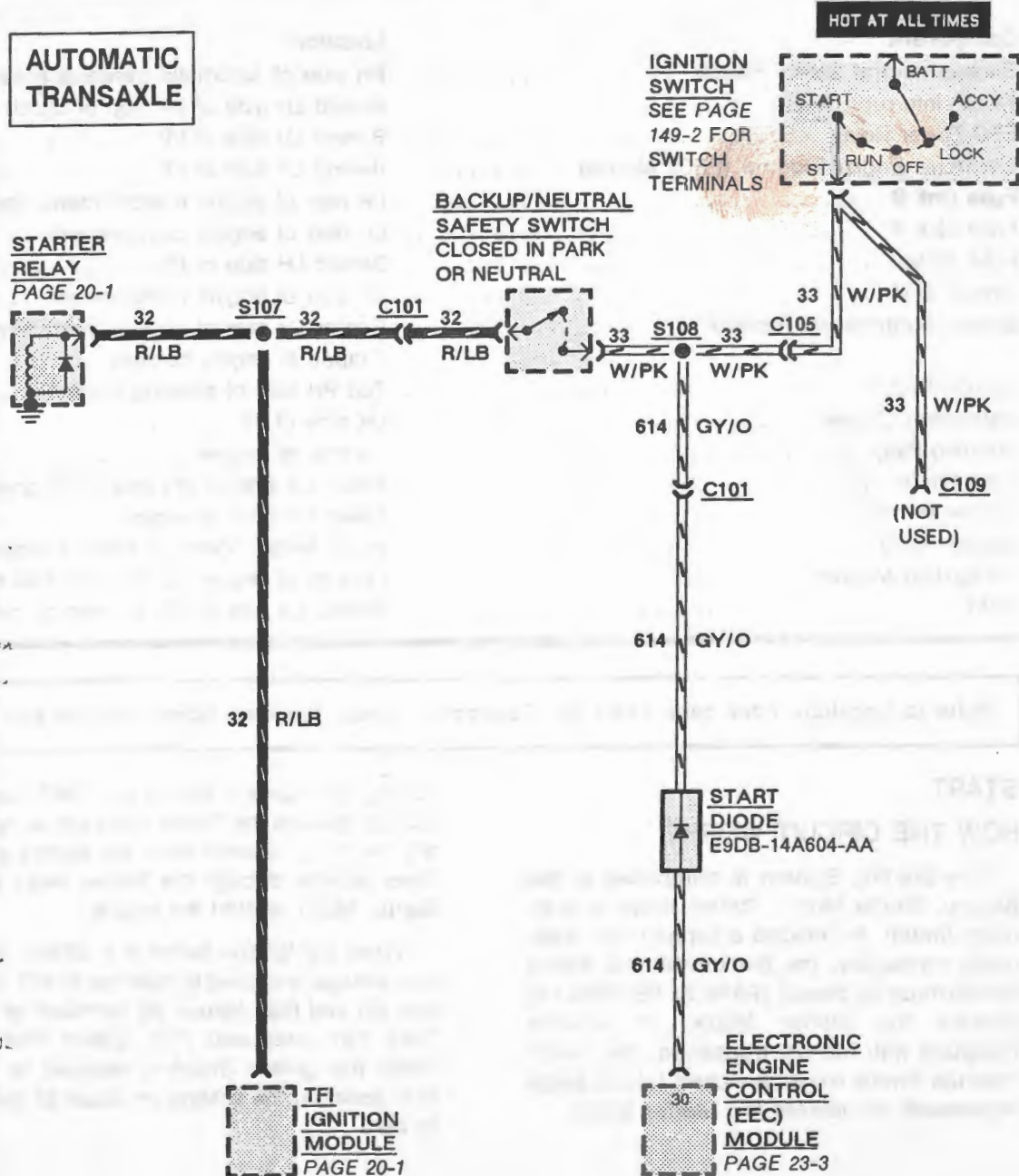
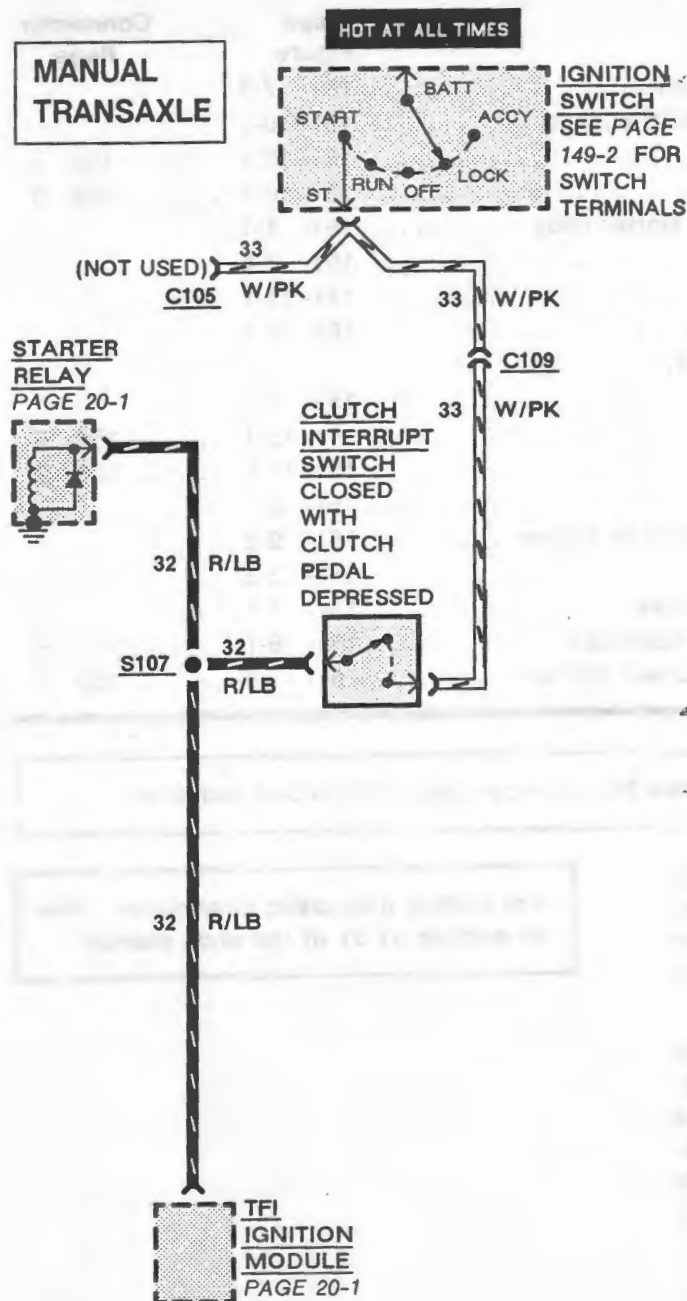
CONDITION	POSSIBLE CAUSE	ACTION
• Battery doesn't stay charged • Alternator Warning Indicator is always on	• Open or poor connection at Alternator output • Loose Alternator drive belt • Corroded battery terminals	• Check that connectors or terminals on Alternator and Starter Relay are clean and tight • Check Fuse Link D • Check alternator belt tension • Check that battery post terminals are clean. Check that terminals on battery posts cannot be easily turned by hand.

IGNITION NOTES 12-8





START/IGNITION 20-2



20-3 START/IGNITION

Component	Location	Page Figure	Connector Page
Backup/Neutral Safety Switch	RH side of automatic transaxle assembly	151- 2-3	
Clutch Interrupt Switch	Behind LH side of I/P, top of clutch pedal support	151- 10-1	
EEC Power Relay	Behind LH side of I/P	151- 10-3	150- 2
Electronic Engine Control (EEC) Module	Behind LH side of I/P	151- 10-1	150- 3
Fuse Link B	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Link X	LH rear of engine compartment	151- 1-4	
Fuse Panel	Behind LH side of I/P	151- 11-1	
Ignition Coil	LH side of engine compartment	151- 1-1	
Ignition Suppression Resistor	Center LH rear of engine compartment, taped in engine harness	151- 1-4	
Ignition Switch	Top RH side of steering column	151- 13-1	150- 9
Instrument Cluster	LH side of I/P	151- 11-6	150- 8
Shorting Plug	LH side of engine	151- 6-1	
Start Diode	Under LH side of I/P, near dash grommet to engine	151- 9-3	
Starter Motor	Lower LH front of engine	151- 3-5	
Starter Relay	At LH fender apron, in front of shock tower	151- 1-1	
TFI Ignition Module	LH side of engine, on RH rear side of distributor	151- 6-1	150- 16
C251	Behind LH side of I/P, on rear of instrument cluster	151- 11-6	150- 8

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

START

HOW THE CIRCUIT WORKS

The Starting System is comprised of the Battery, Starter Motor, Starter Relay, and Ignition Switch. In vehicles equipped with automatic transaxles, the Backup/Neutral Safety Switch must be closed (PARK or NEUTRAL) to operate the Starter Motor. In vehicles equipped with manual transaxles, the Clutch Interrupt Switch must be closed (clutch pedal depressed) to operate the Starter Motor.

Turning the Ignition Switch to START sends current through the Starter Relay coil to operate the relay. Current from the Battery then flows directly through the Starter Relay and Starter Motor to start the engine.

When the Ignition Switch is in START, battery voltage is applied to both the START (circuit 32) and RUN (circuit 16) terminals of the Thick Film Integrated (TFI) Ignition Module. When the Ignition Switch is released to the RUN position, the voltage on circuit 32 drops to zero.

For further diagnostic information, refer to section 31-01 of the shop manual.

TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
Starter cranks slowly, or Starter Relay chatters	Low charge in Battery	- To prevent engine from starting, disconnect 11 (DG/Y) wire from Ignition Coil. - Measure voltage at battery terminals while Ignition Switch is in START. If voltage is less than 9.5 volts, recharge Battery.
Starter Relay clicks, but starter doesn't crank	Corroded terminals on Battery, Starter Relay or Starter Motor	- Check that terminals are clean at battery post, Starter Relay, engine ground, and Starter Motor. To ensure that cable terminals are tight, check that terminals cannot be easily turned by hand. - Disconnect 11 (DG/Y) wire from Ignition Coil and measure voltage between negative battery terminal and ground while Ignition Switch is in START. If voltage is greater than 0.5 volts, check negative battery terminal and engine ground for corroded connections, or replace cable to engine ground. - Measure voltage between positive battery terminal and main (battery) terminal of Starter Relay while Ignition Switch is in START. If voltage is greater than 0.5 volts, check positive battery terminal and main relay terminal for corroded connections, or replace R wire. - Measure voltage between BK wire at Starter Relay and BK wire at Starter Motor while Ignition Switch is in START. If voltage is greater than 0.5 volts, check terminals for corroded connections, or replace BK wire.
Starter Relay doesn't click	- Inoperative Ignition Switch - Starter Relay not grounded	- Remove 32 (R/LB) wire from Starter Relay. With transaxle in PARK or NEUTRAL, jumper this terminal to the main (battery) terminal of the Starter Relay. If starter operates, check Ignition Switch and Start Circuit. If Starter Relay doesn't operate, replace it. - Check that Starter Relay is grounded tightly. Repeat action above.
Starter spins (humming noise), but doesn't crank engine	Inoperative starter drive	Remove Starter Motor and repair or replace starter drive

20-5 START/IGNITION

IGNITION

HOW THE CIRCUIT WORKS

The Ignition System contains a Thick Film Integrated (TFI) Ignition Module, which is mounted on the side of the Distributor. The Distributor is horizontally mounted and directly driven by the engine camshaft.

When the engine is cranking or running:

- The magnetic pickup in the Distributor sends pulses to the TFI Ignition Module as the poles on the armature pass the poles on the stator. On vehicles equipped with EFI, the TFI Ignition Module transmits a signal to the Electronic Engine Control (EEC) Module and back to the TFI Ignition Module.

- The TFI Ignition Module switches current on and off in the primary circuit of the Ignition Coil according to the Distributor pulses.

- Each interruption of the primary current makes the Ignition Coil secondary circuit produce an open circuit high-voltage pulse of up to 40,000 volts.

High voltage pulses are transmitted to the Distributor, which sends them to fire the spark plugs.

Two signal circuits, 324 (Y/LG) and 349 (DB) wires, are connected between the TFI Ignition Module and the the EEC Module.

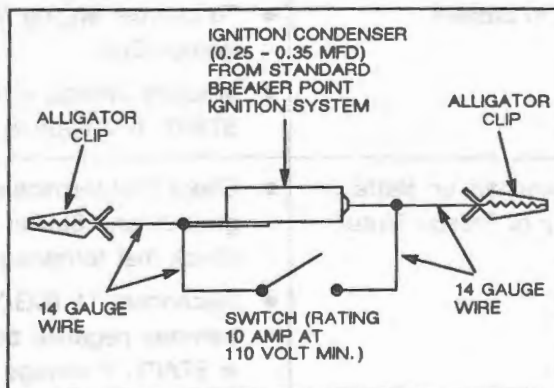


Figure 1

Make up a test jumper as shown in Figure 1. It is important to use only this test jumper when making these checks. Solid wire jumpers will not work for the quick checks.

CAUTION

Do not leave test jumper closed for more than one second at a time.

For further diagnostic information, refer to Engine/Emissions Diagnosis Manual (Volume H).

TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
Starter cranks engine, but engine doesn't start	- No voltage at TFI Ignition Module or Distributor - Inoperative TFI Ignition Module	- Check that TFI Ignition Module is securely attached to Distributor - Check for loose or damaged spark plug wires or coil wires. If any boots or nipples are removed, re-apply new silicone di-electric compound. - Make sure all ignition wires are connected correctly VOLTAGE TEST Disconnect connector at TFI Ignition Module. Check for battery voltage between each pin (+) and ground (-) as follows (use a straight pin in connector socket hole to make contact): - With Ignition Switch in OFF position, check for 0 volts at each terminal - If voltage is present, check Ignition Switch. - Turn Ignition Switch to RUN. Check for battery voltage at 16 (R/LG) and 11 (DG/Y) wires. Check for 0 volts at 32 (R/LB) wire. - If inoperative, check continuity of Ignition Switch, Ignition Coil and wires. - Disconnect 32 (R/LB) wire lug at Starter Relay. Turn Ignition to START. Check for battery voltage at all three wires. - If inoperative, check continuity of Ignition Switch and 32 (R/LB) wires. - Reconnect 32 (R/LB) wire at Starter Relay. RUN-MODE SPARK TEST - Remove coil wire from Distributor cap. Install spark tester or modified spark plug (side electrode removed) in coil wire terminal. - Unplug connector at TFI Ignition Module. In the harness side of the connector, connect the special test jumper (Figure 1) between ground and the 11 (DG/Y) lead. Use a straight pin in connector socket hole to make contact.

(continued)

20-7 START/IGNITION

TROUBLESHOOTING HINTS (continued)

CONDITION	POSSIBLE CAUSE	ACTION
Starter cranks engine, but engine doesn't start	- No voltage at TFI Ignition Module or Distributor - Inoperative TFI Ignition Module	c. With the Ignition Switch in RUN, close the test jumper switch. Leave closed for about one second, then open. Repeat this several times. There should be a spark each time this switch is opened. - If there is no spark, the problem is in the primary circuit. Check the coil for internal shorts or opens. Check primary resistance (0.5 ohms) and secondary resistance (8000 to 11,500 ohms). Replace coil if necessary. - If there is spark, the primary wiring and coil are OK; the problem is in the Distributor Pickup or the TFI Ignition Module. Perform the Distributor Pickup Test. • DISTRIBUTOR PICKUP TEST a. Remove Distributor cap and rotor (see Shop Manual section 23-05 for disassembly and assembly). Use special tool, or put piece of tape on base near terminals. Connect voltmeter between 259 (BK/O) and (BK/P) terminals inside bottom side of Distributor. NOTE: Do not use a voltmeter that is combined with a dwell-meter. Slight needle oscillation (1/2 volt) may not be detectable on this type of test unit. b. Set meter on its lowest scale and crank the engine. Meter needle should oscillate slightly between 0 and approximately 0.5 volts. CAUTION: DO NOT CRANK THE ENGINE FOR MORE THAN 10 SECONDS. If the vehicle has a catalytic converter, disconnect the air supply line between the Bypass Valve and the Manifold before cranking the engine with the Ignition Switch in OFF. This will prevent damage to the catalytic converter. After testing, run the engine for at least 3 minutes before reconnecting the air supply line to clear excess fuel from the exhaust system.

(continued)

TROUBLESHOOTING HINTS (continued)

CONDITION	POSSIBLE CAUSE	ACTION
Starter cranks engine, but engine doesn't start	- No voltage at TFI Ignition Module or Distributor - Inoperative TFI Ignition Module	- If meter oscillates, replace TFI Ignition Module. - If meter does not oscillate, remove the TFI Ignition Module and repeat test. - If meter needle now oscillates, the stator is good. Replace TFI Ignition Module. - If needle still does not oscillate, replace stator assembly. c. When re-assembling Distributor, tighten rotor to 2.8-3.9 Newton-meters; tighten cap to 2.0-2.6 Newton-meters.

HOT AT ALL TIMES

IGNITION SWITCH
SEE PAGE 149-2 FOR SWITCH TERMINALS

WITHOUT PASSIVE RESTRAINTS

WITH PASSIVE RESTRAINTS

SEE START/IGNITION
PAGE 20-1

HOT AT ALL TIMES

FUSE LINK C
PAGE 12-1
18 GA BROWN

ENGINE/COOLING FAN
PAGE 33-1

FUEL PUMP RELAY

INERTIA SWITCH OPENS ON IMPACT

PASSIVE RESTRAINT SYSTEM
PAGE 45-2

WITHOUT PASSIVE RESTRAINTS

WITH PASSIVE RESTRAINTS

INERTIA SWITCH OPENS ON IMPACT

FUEL PUMP

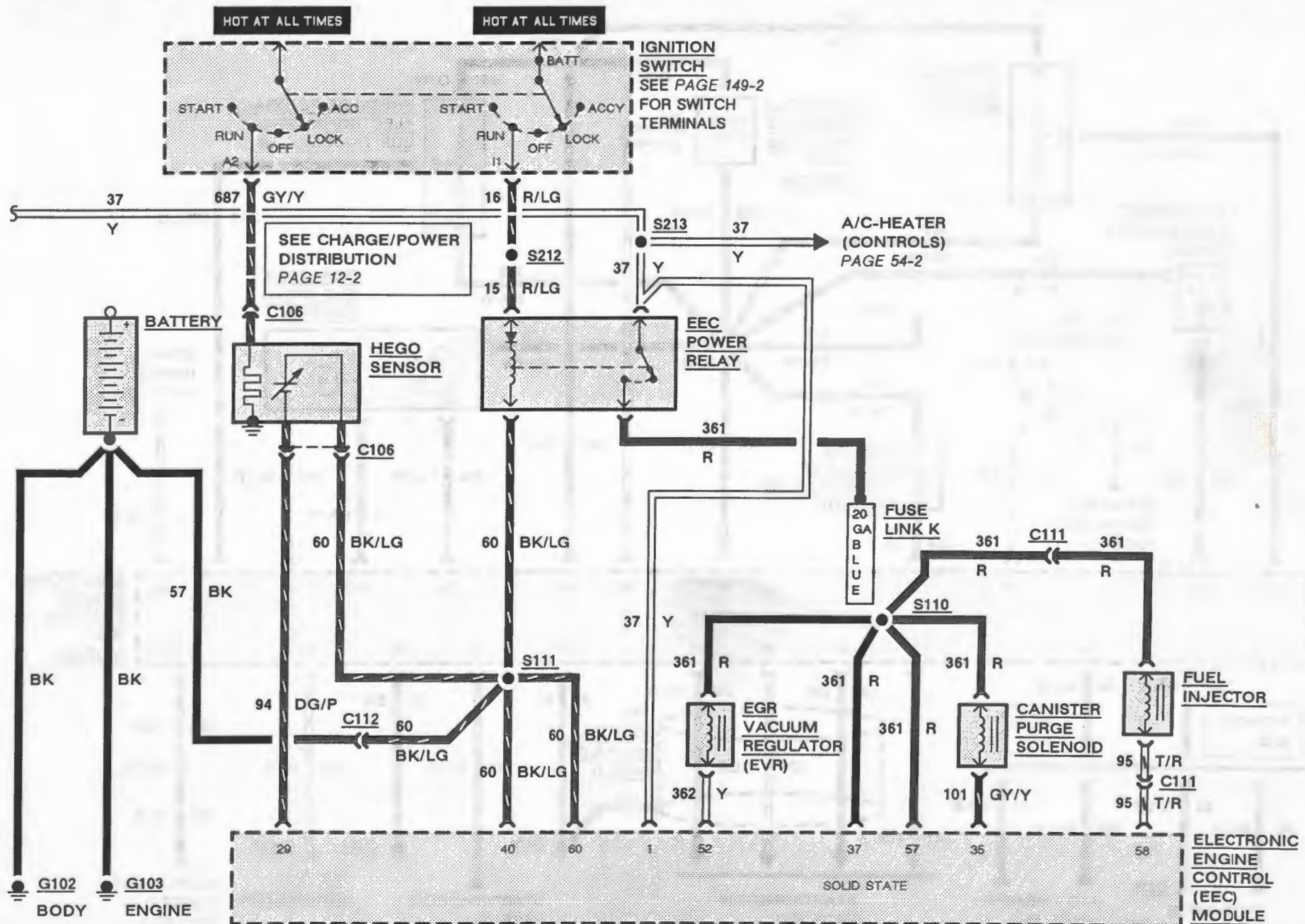
FUEL PUMP

ELECTRONIC ENGINE CONTROL (EEC) MODULE

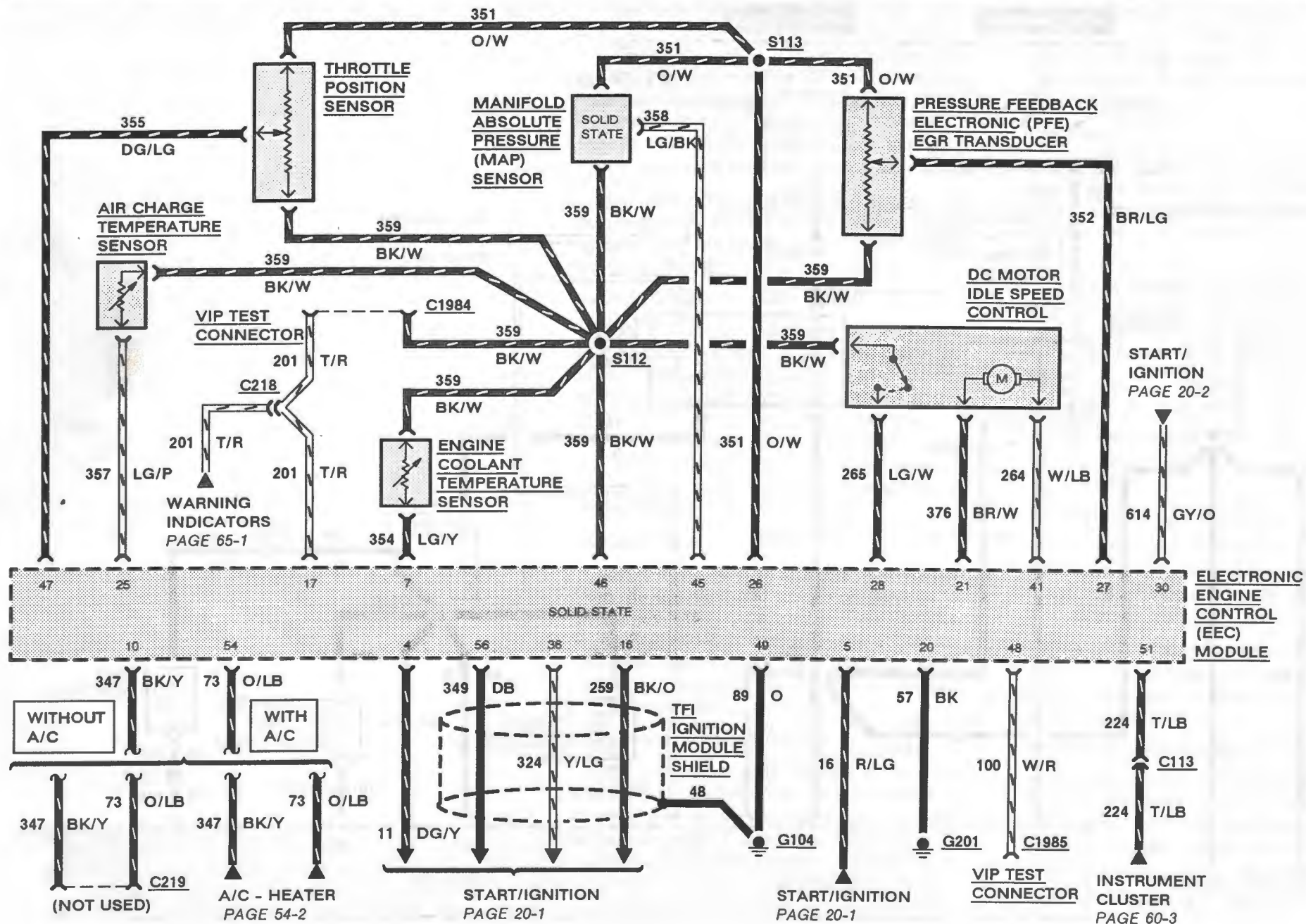
SOLID STATE

SEE GROUNDS
PAGE 10-6

ELECTRONIC ENGINE CONTROL (CFI) 23-2



23-3 ELECTRONIC ENGINE CONTROL (CFI)



ELECTRONIC ENGINE CONTROL (CFI) 23-4

Component	Location	Page Figure	Connector Page
Air Charge Temperature Sensor	Top RH rear of engine	151-6-1	
Canister Purge Solenoid	LH side of engine, above transaxle	151-6-1	
DC Motor Idle Speed Control	Upper RH rear of engine	151-6-1	
EEC Power Relay	Behind LH side of I/P	151-10-3	 150- 2
EGR Vacuum Regulator	LH rear of engine compartment, behind shock tower	151-1-1	
Electronic Engine Control (EEC) Module	Behind LH side of I/P	151-10-1	 150- 3
Engine Coolant Temperature Sensor (CFI)	LH rear of engine	151-6-1	
Fuel Pump	Below rear of car, inside fuel tank	151-17-3	
Fuel Injector	Top rear of engine	151-6-1	
Fuel Pump Relay	Behind LH side of I/P	151-10-3	 150- 7
Fuse Link C	LH rear of engine compartment, near starter relay	151-1-1	
Fuse Link K	LH rear of engine compartment, near shock tower	151-1-1	
HEGO Sensor	Front of engine, in exhaust manifold	151-2-1	
Ignition Switch	Top RH side of steering column	151-13-1	 150- 9
Inertia Switch (3 Door) (5 Door)	LH side of cargo area	151-17-4	 150- 9
Inertia Switch (Wagon)	LH rear corner of cargo area, behind LH stop lamp assembly	151-17-5	 150- 9
Manifold Absolute Pressure (MAP) Sensor	RH side of engine compartment, on shock tower	151-5-1	
Pressure Feedback Electronic (PFE) EGR Transducer ..	Upper LH rear of engine	151-6-1	
Throttle Position Sensor	Top LH rear of engine	151-7-1	
VIP Test Connector C1984	RH side of engine compartment	151-5-1	
VIP Test Connector C1985	RH side of engine compartment	151-5-1	

* No Figure Available

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

The Electronic Engine Control (EEC) System includes an Electronic Engine Control (EEC) Module that receives inputs from various sensors. The EEC Module uses the input information to control Fuel Flow, Exhaust Gas Recirculation (EGR), Ignition and Evaporative Emissions. The EEC Module works with these four systems to provide improved fuel economy, performance and lower exhaust emissions.

EEC Power Relay

The EEC Power Relay supplies power to the EEC Module and related components. When the Ignition Switch is turned to RUN or START, voltage is applied to the EEC Power Relay coil, causing the relay's contacts to close and power to be applied through Fuse Link K to the EEC Module, Fuel Injector, EGR Vacuum Regulator (EVR), and Canister Purge Solenoid.

Fuel Flow

In the 1.9L Central Fuel Injection (CFI) engine, a single injector injects fuel into the throttle body, which is mounted on top of the intake manifold. The fuel is then distributed through the intake manifold to each cylinder.

Based on the inputs it receives from the various sensors, the EEC Module determines the duration and timing of the fuel injector.

23-5 ELECTRONIC ENGINE CONTROL (CFI)

The Fuel Pump supplies fuel under pressure to the Fuel Charging Assembly, Pressure Regulator, and Fuel Injector. When the Ignition Switch is in RUN or START, voltage is applied through Fuse Link X to the Fuel Pump Relay coil. The coil is grounded by the EEC Module, the relay's contacts close, and voltage is applied to the Fuel Pump.

The Inertia Switch is a safety device that cuts off voltage to the Fuel Pump if a collision occurs. Once the Inertia Switch opens it must be reset manually.

Exhaust Gas Recirculation (EGR)

The EEC Module controls exhaust gas recirculation by varying the voltage it applies to the EGR Vacuum Regulator (EVR). To determine the proper voltage for the EVR, the EEC Module uses an input from the Pressure Feedback Electronic (PFE) EGR Transducer. The PFE EGR Transducer measures exhaust gas pressure and converts the pressure to a voltage for the EEC Module.

Canister Purge

The carbon canister collects fuel vapors from the fuel tank and other components to be burned later in the engine. The Canister Purge Solenoid is controlled by the EEC Module. When the EEC Module grounds the Canister Purge Solenoid, the vapors are released to the engine for burning.

DC Motor Idle Speed Control

The DC Motor Idle Speed Control is mounted on the Fuel Charging Assembly. It controls engine idle as engine load changes to prevent engine stall. The DC Motor Idle Speed Control incorporates an integral tracking switch which signals the EEC Module

when the throttle lever is contacting the output shaft of the DC Motor Idle Speed Control. The EEC Module controls the DC Motor Idle Speed Control based on inputs received from various sensors.

Ignition

The EEC System has a special Distributor and Ignition Module. The EEC Distributor has no vacuum advance mechanism. Instead, all ignition timing is controlled by the EEC Module.

The EEC Module receives engine timing information from the Distributor through the TFI Ignition Module. The EEC Module uses this information to determine spark timing and advance.

Electronic Engine Control (EEC) Module

The EEC Module uses information from various sensors to determine engine operating conditions.

Air Charge Temperature Sensor

The Air Charge Temperature Sensor is a thermistor whose resistance decreases as manifold air temperature increases (Negative Temperature Coefficient or NTC).

The EEC Module measures the voltage drop across the Air Charge Temperature Sensor and uses this information to help calculate fuel delivery.

Throttle Position Sensor

The Throttle Position Sensor is a potentiometer. The sensor output is a DC voltage that varies with throttle plate angle. By monitoring the Throttle Position Sensor output, the EEC Module calculates fuel delivery requirements based on driver demand.

Engine Coolant Temperature Sensor

The Engine Coolant Temperature Sensor is a thermistor whose resistance decreases as engine coolant temperature increases. The EEC Module measures the voltage drop across the Engine Coolant Temperature Sensor and uses this information to help calculate fuel delivery, spark timing and EGR control.

Manifold Absolute Pressure (MAP) Sensor

The Manifold Absolute Pressure (MAP) Sensor measures the pressure in the intake manifold and converts this measurement to a variable frequency signal to be used by the EEC Module. With the Ignition Switch in the Key-On/Engine-Off position, the MAP Sensor measures the varying pressure (vacuum) in the intake manifold.

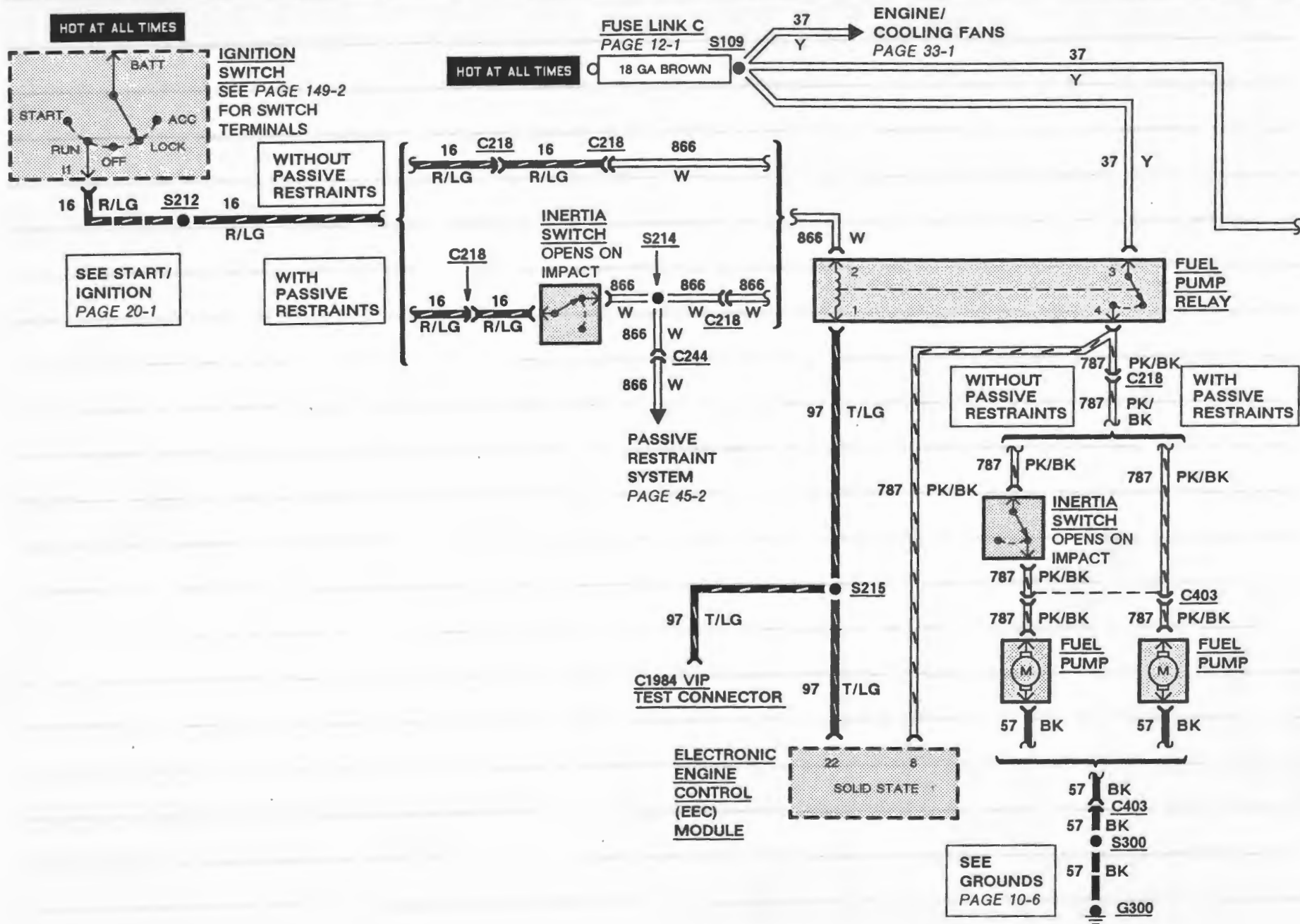
Heated Exhaust Gas Oxygen (HEGO) Sensor

The Heated Exhaust Gas Oxygen (HEGO) Sensor provides a voltage to the EEC Module for regulating air/fuel ratio. It does this by sensing the oxygen content of the exhaust gases. Too much oxygen indicates a lean mixture, while too little oxygen indicates a rich mixture.

For further diagnostic information, refer to the Engine/Emissions Diagnosis Manual (Volume H).

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24-1 ELECTRONIC ENGINE CONTROL (EFI)



Wiring Diagram for Electronic Engine Control (EEC) Module

IGNITION SWITCH
SEE PAGE 149-2 FOR SWITCH TERMINALS

HEGO SENSOR

EEC POWER RELAY

FUEL INJECTORS
NO.1 NO.2 NO.3 NO.4

IDLE AIR BYPASS VALVE

EGR SHUT OFF SOLENOID

CANISTER PURGE SOLENOID

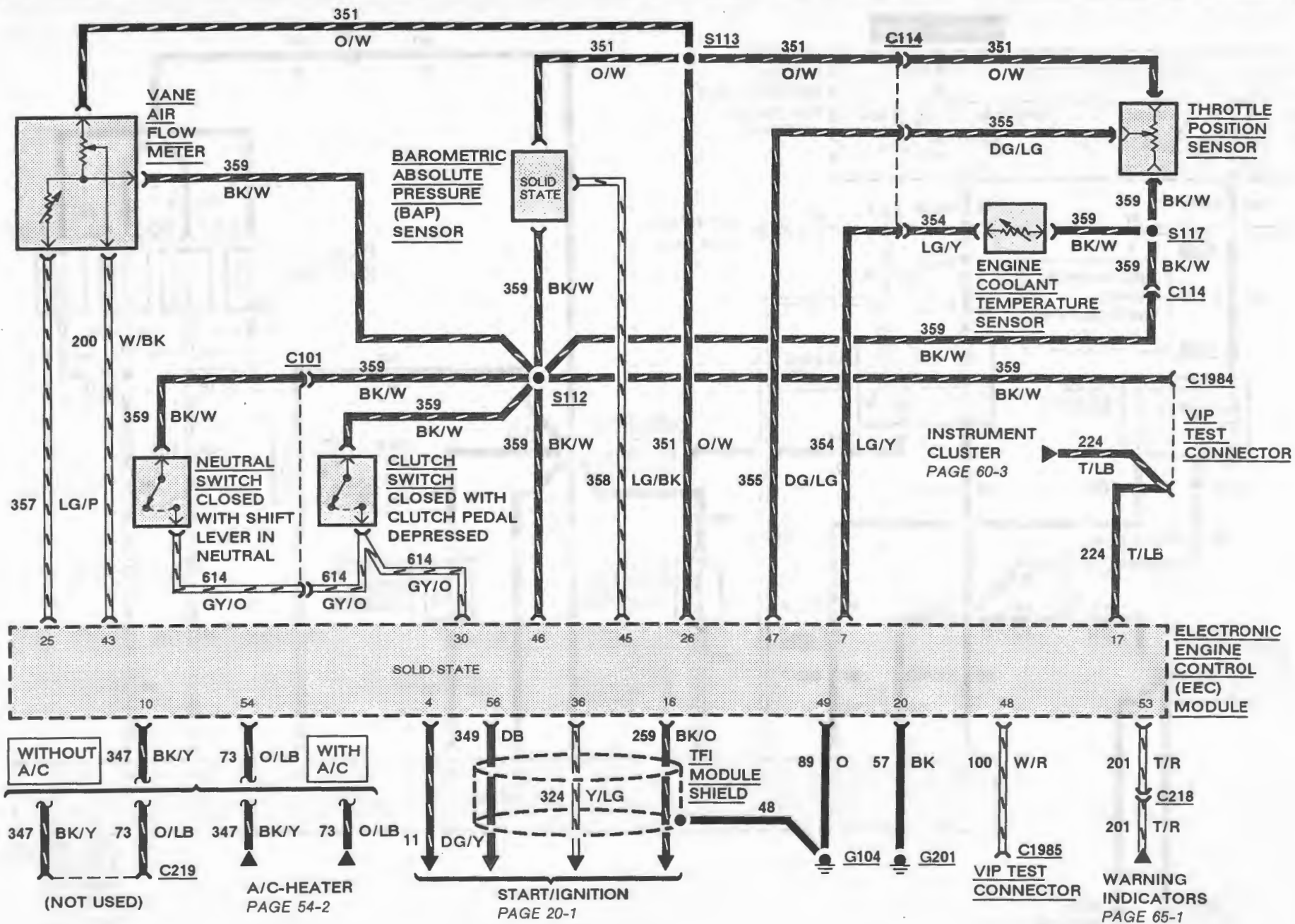
SOLID STATE

ELECTRONIC ENGINE CONTROL (EEC) MODULE

Wiring Details:

- Ignition Switch:** START, RUN, OFF, LOCK, ACC, BATT. Terminals: A2, H.
- HEGO Sensor:** C106, C108, C112.
- EEC Power Relay:** S212, S213.
- Fuel Injectors:** S114, S115, S116.
- Idle Air Bypass Valve:** S110.
- EGR Shut Off Solenoid:** S111.
- Canister Purge Solenoid:** S110.
- Solid State:** 40, 60, 29, 1, 35, 37, 57, 32, 21, 58, 59.
- EEC Module:** G102 BODY, G103 ENGINE.

24-3 ELECTRONIC ENGINE CONTROL (EFI)



ELECTRONIC ENGINE CONTROL (EFI) 24-4

Component	Location	Page Figure	Connector Page
Barometric Absolute Pressure (BAP) Sensor	RH side of engine compartment, on shock tower	151- 5-1	
Canister Purge Solenoid	LH side of engine, above transaxle	151- 6-1	
Clutch Switch	Behind LH side of I/P, on clutch pedal support	151- 10-1	
EEC Power Relay	Behind LH side of I/P	151- 10-3	150- 2
EGR Shut Off Solenoid	LH rear of engine compartment, behind shock tower	151- 1-1	
Electronic Engine Control (EEC) Module	Behind LH side of I/P	151- 10-1	150- 3
Engine Coolant Temperature Sensor (EFI)	LH rear of engine	151- 7-1	
Fuel Injectors	In intake manifold	151- 7-1	
Fuel Pump	Below rear of car, inside fuel tank	151- 17-3	
Fuel Pump Relay	Behind LH side of I/P	151- 10-3	150- 7
Fuse Link C	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Link K	LH rear of engine compartment, near shock tower	151- 1-1	
HEGO Sensor	Front of engine, in exhaust manifold	151- 2-1	
Idle Air Bypass Valve	Top LH side of engine	151- 2-1	
Ignition Switch	Top RH side of steering column	151- 13-1	150- 9
Inertia Switch (3 Door) (5 Door)	LH side of cargo area	151- 17-4	150- 9
Inertia Switch (Wagon)	LH rear corner of cargo area, behind LH stop lamp assembly	151- 17-5	150- 9
Neutral Switch	Lower LH side of manual transaxle	151- 2-2	
Throttle Position Sensor	Top LH rear of engine	151- 7-1	
Vane Air Flow Meter	LH side of engine compartment, near starter relay	151- 1-3	
VIP Test Connector C1984	RH side of engine compartment	151- 5-1	
VIP Test Connector C1985	RH side of engine compartment	151- 5-1	

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

The Electronic Engine Control (EEC) System includes an Electronic Engine Control (EEC) Module that receives inputs from various sensors. The EEC Module uses the input information to control Fuel Flow, Exhaust Gas Recirculation (EGR), Ignition and Evaporative

Emissions. The EEC Module works with these four systems to provide improved fuel economy and performance and lower exhaust emissions.

EEC Power Relay

The EEC Power Relay supplies power to the EEC Module and related components. When

the Ignition Switch is turned to RUN or START, voltage is applied to the EEC Power Relay coil, causing the relay's contacts to close and power to be applied through Fuse Link K to the EEC Module, Fuel Injectors, EGR Solenoid, Engine Idle Air Bypass Solenoid, and Canister Purge Solenoid.

24-5 ELECTRONIC ENGINE CONTROL (EFI)

Fuel Flow

In the 1.9L Electronic Fuel Injection (EFI) engine, fuel is injected into the engine by four fuel injectors located above each cylinder's intake valve.

Based on the inputs it receives from various sensors, the EEC Module determines the duration and timing of the fuel injectors.

The Fuel Pump supplies fuel under pressure to the fuel rail and the Fuel Injectors. When the Ignition Switch is in RUN or START, voltage is applied through Fuse Link X to the Fuel Pump Relay coil. The coil is grounded by the EEC Module, the relay's contacts close, and voltage is applied to the Fuel Pump.

The Inertia Switch is a safety device that cuts off voltage to the Electric Fuel Pump if a collision occurs. Once the Inertia Switch opens it must be reset manually.

Exhaust Gas Recirculation (EGR)

The EEC Module controls exhaust gas recirculation by energizing or de-energizing the EGR Shut Off Solenoid.

When the engine is cold, the EGR Shut Off Solenoid is de-energized and the vacuum path between the throttle body and the EGR valve is blocked. There is no exhaust gas recirculation.

When the engine reaches normal operating temperature, the EGR Shut Off Solenoid is energized and the vacuum path between the throttle body and the EGR valve is opened. Exhaust gas recirculation then occurs in an amount proportional to ported vacuum at the throttle body.

Canister Purge

The carbon canister collects fuel vapors from the fuel tank and other components to be burned later in the engine. The Canister Purge Solenoid is controlled by the EEC Module. When the EEC Module grounds the Canister Purge Solenoid, the vapors are released to the engine for burning.

Idle Air Bypass Valve

The Idle Air Bypass Valve controls engine idle speed by regulating the amount of air allowed to pass around the throttle plates. This permits the EEC Module to make idle speed corrections to prevent engine stall during cold engine warmups and as engine load changes.

Ignition

The EEC System has a special Distributor and Ignition Module. The EEC Distributor has no vacuum advance mechanism. Instead, all ignition timing is controlled by the EEC Module.

The EEC Module receives engine timing information from the Distributor through the TFI Ignition Module. The EEC Module uses this information to determine spark timing and advance.

Electronic Engine Control Inputs

The EEC Module uses information from various sensors to determine engine operating conditions.

Vane Air Flow Meter

The Vane Air Flow Meter measures the amount of air flowing into the intake manifold and the temperature of the air. The meter

uses a potentiometer to measure air flow. The output signal to the EEC Module is a DC voltage that varies with the position of the vane. The vane moves according to the amount of air passing it. The Vane Air Flow Meter uses a thermistor to measure air temperature. The EEC Module detects the voltage drop across the thermistor and uses this information to calculate fuel delivery, spark timing and EGR control.

Throttle Position Sensor

The Throttle Position Sensor is a potentiometer. The sensor output is a DC voltage that varies with throttle plate angle. By monitoring the Throttle Position Sensor output, the EEC Module calculates fuel delivery requirements based on driver demand.

Engine Coolant Temperature Sensor

The Engine Coolant Temperature Sensor is a thermistor whose resistance decreases as engine coolant temperature increases. The EEC Module measures the voltage drop across the Engine Coolant Temperature Sensor and uses this information to help calculate fuel delivery, spark timing and EGR control.

Barometric Absolute Pressure (BAP) Sensor

The Barometric Absolute Pressure (BAP) Sensor measures atmospheric pressure for the EEC Module, which uses the input to compensate for changes in altitude. The BAP Sensor converts the pressure measurement to a variable frequency signal that is used to control spark advance, EGR flow, and Air/Fuel ratio.

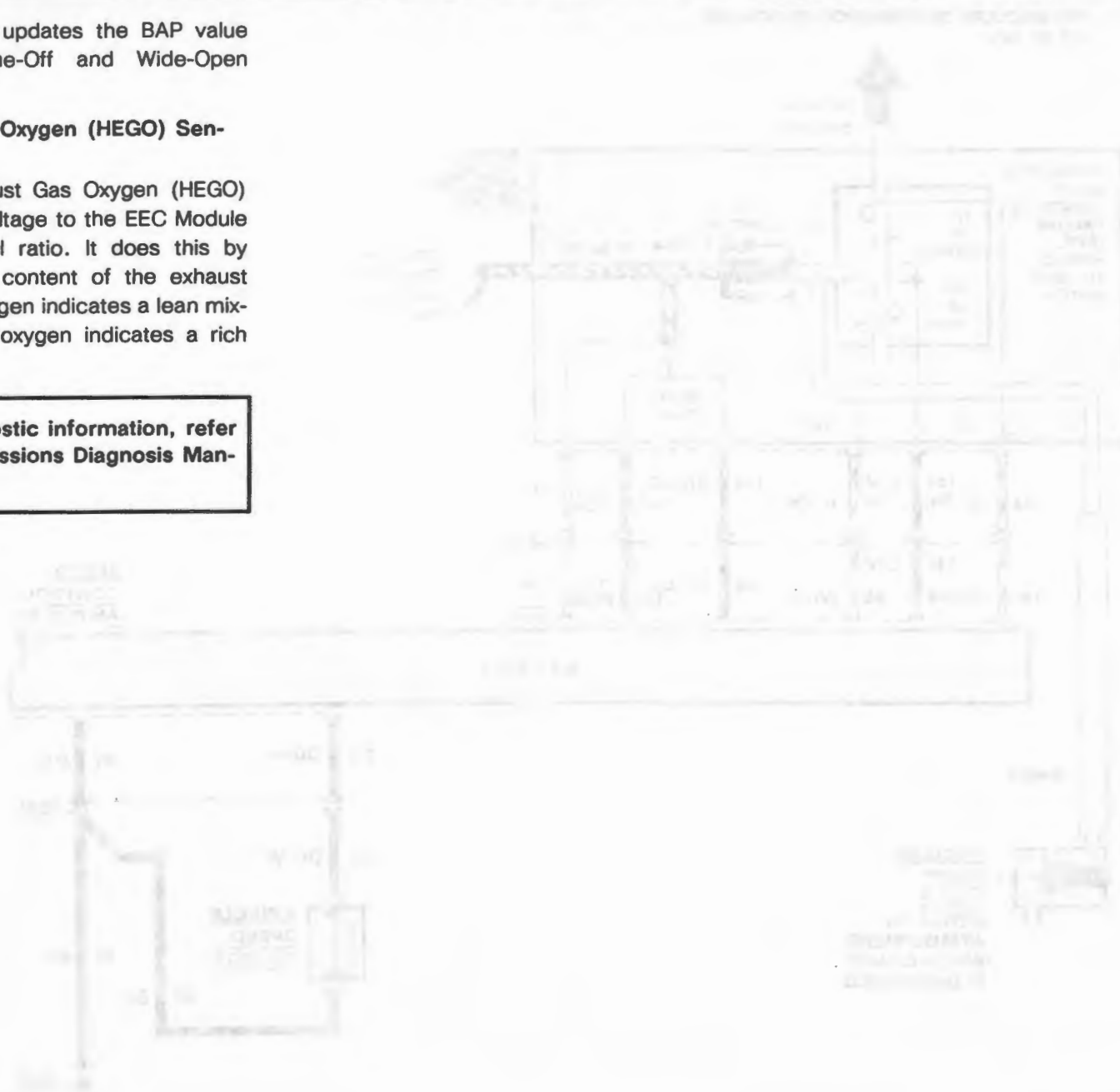
ELECTRONIC ENGINE CONTROL (EFI) 24-6

The EEC Module updates the BAP value during Key-On/Engine-Off and Wide-Open throttle conditions.

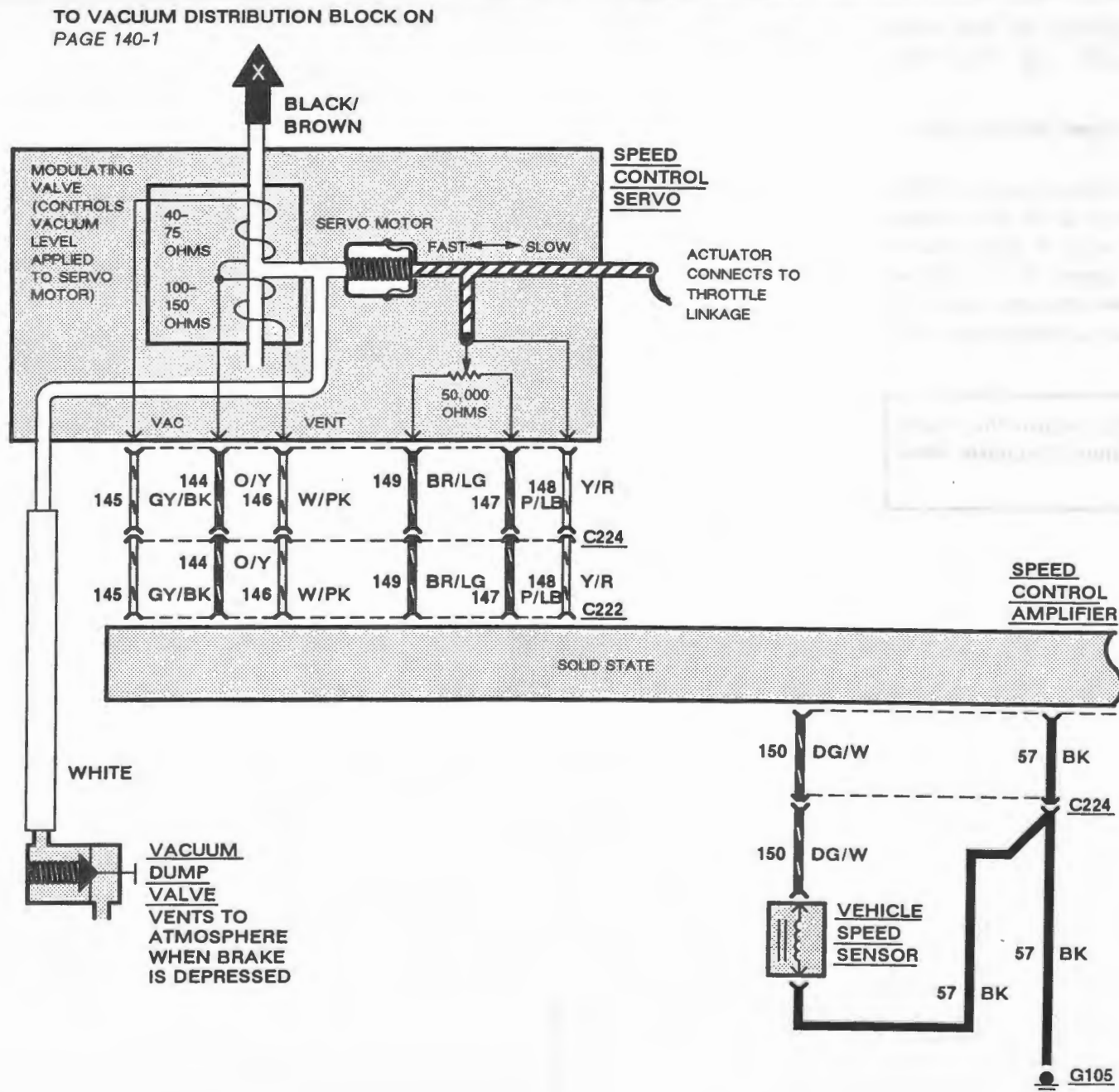
Heated Exhaust Gas Oxygen (HEGO) Sensor

The Heated Exhaust Gas Oxygen (HEGO) Sensor provides a voltage to the EEC Module for regulating air/fuel ratio. It does this by sensing the oxygen content of the exhaust gases. Too much oxygen indicates a lean mixture, while too little oxygen indicates a rich mixture.

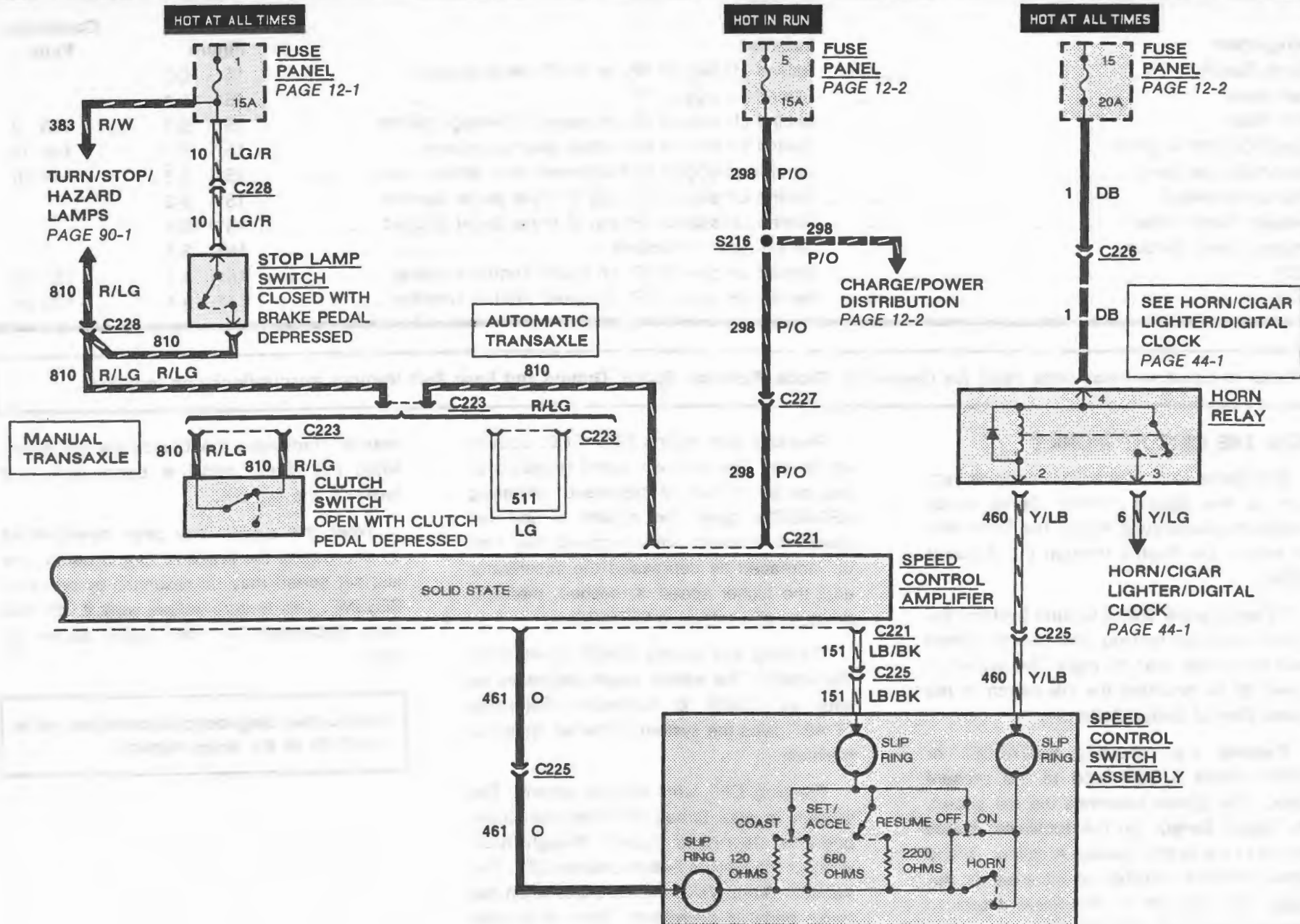
For further diagnostic information, refer to the Engine/Emissions Diagnosis Manual (Volume H).



31-1 SPEED CONTROL



SPEED CONTROL 31-2



31-3 SPEED CONTROL

Component	Location	Page Figure	Connector Page
Clutch Switch	Behind LH side of I/P, on clutch pedal support	151- 10-1	
Fuse Panel	Behind LH side of I/P	151- 11-1	
Horn Relay	Behind LH side of I/P, RH side of steering column	151- 9-1	150- 2
Speed Control Amplifier	Behind LH side of I/P, under steering column	151- 9-1	150-15
Speed Control Servo	LH side of engine compartment, near shock tower	151- 1-3	150-16
Stop Lamp Switch	Behind LH side of I/P, top of brake pedal support	151- 9-2	
Vacuum Dump Valve	Behind LH side of I/P, top of brake pedal support	151- 10-2	
Vehicle Speed Sensor	On LH rear of transaxle	151- 3-1	
C221	Behind LH side of I/P, on speed control amplifier	151- 9-1	150-15
C222	Behind LH side of I/P, on speed control amplifier	151- 9-1	150-15

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

The Speed Control Amplifier controls vacuum to the Speed Control Servo Motor through the Modulating Valve. The Servo Motor moves the throttle through the Actuator cable.

To operate the Speed Control System, the engine must be running and vehicle speed must be greater than 30 mph. The system is turned on by pressing the ON switch of the Speed Control Switch Assembly.

Pressing and releasing SET/ACCEL or COAST sends a command to the present speed. This speed becomes the set speed. The Speed Sensor (at the transaxle) sends signals to the Speed Control Amplifier. These signals tell the amplifier to increase or decrease the vacuum at the Servo Motor to keep the vehicle at the set speed.

Pressing and holding SET/ACCEL speeds up the car. The vehicle's speed increases as long as SET/ACCEL is depressed. Releasing SET/ACCEL gives the system a new set speed to maintain. Vehicle speed may also be increased by depressing the accelerator until the higher speed is reached, then depressing and releasing SET/ACCEL.

Pressing and holding COAST slows down the vehicle. The vehicle speed decreases as long as COAST is depressed. Releasing COAST gives the system a new set speed to maintain.

Pressing OFF turns off the system. The system is also turned off when the brake pedal is depressed (power through R/LG wire) or the Ignition Switch is turned OFF. The Vacuum Dump Valve also operates when the brake pedal is depressed. This is a backup device to release the servo. In vehicles with

manual transaxle, the Clutch Switch opens when the clutch pedal is depressed, and turns off the system.

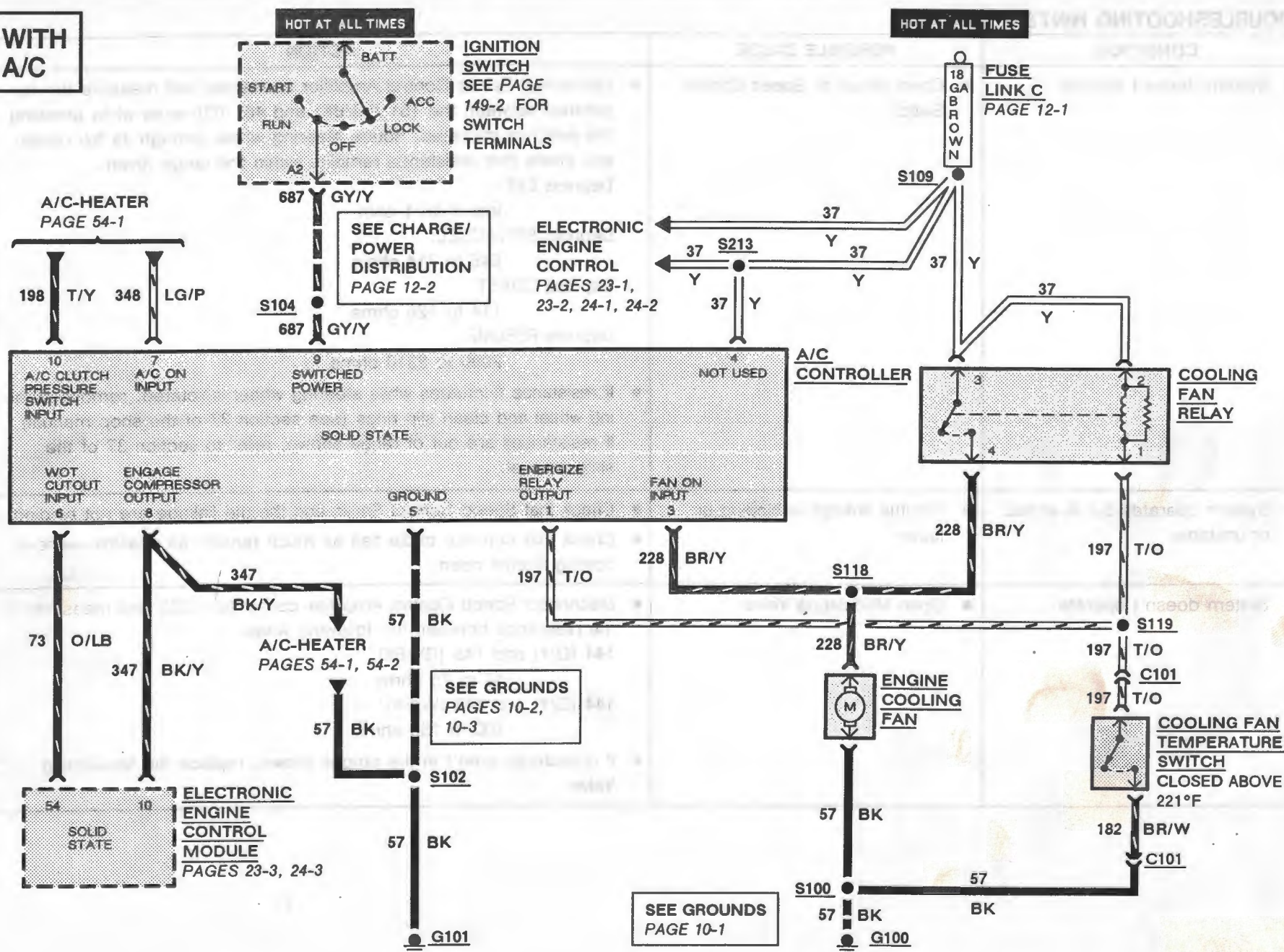
When the system has been de-activated by depressing the brake or clutch pedal, the last set speed may be resumed by pressing RESUME. This feature will not work if OFF has been depressed with car speed below 30 mph.

For further diagnostic information, refer to 37-05 of the shop manual.

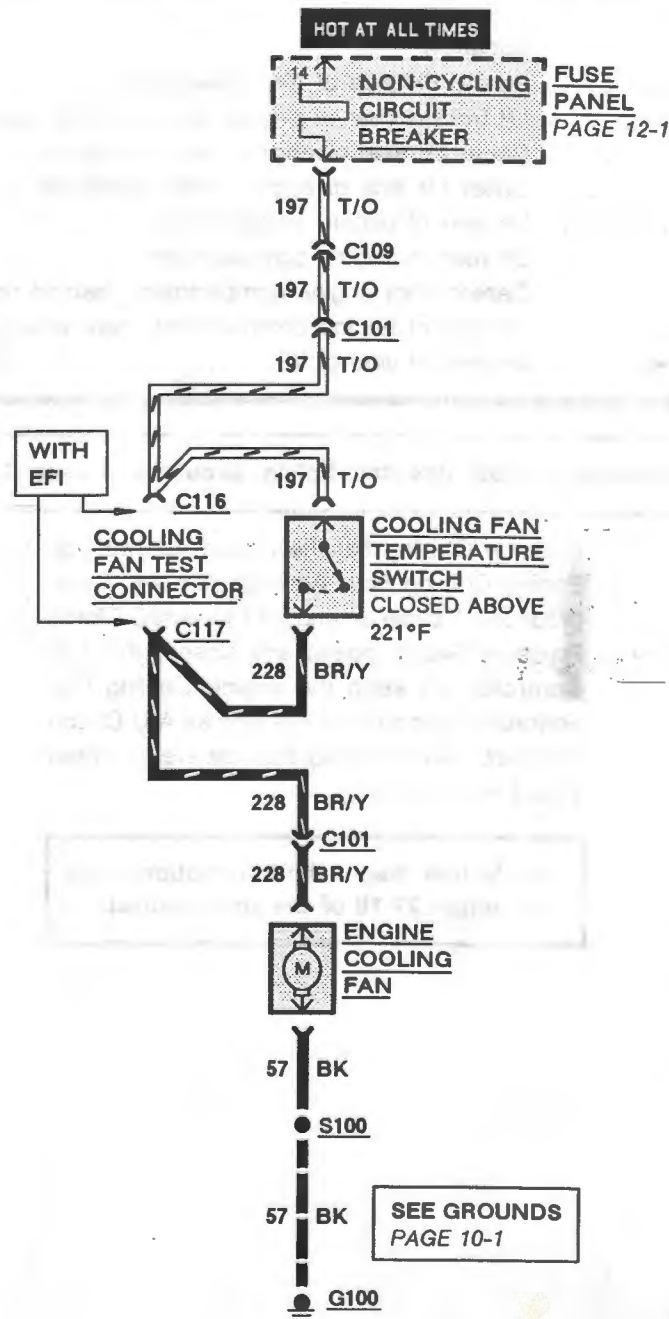
TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
System doesn't operate	Open circuit to Speed Control Switch	- Disconnect Speed Control Amplifier connector and measure the resistance between the 151 (LB/BK) and 461 (O) wires while pressing the switches indicated. Rotate steering wheel through its full range and check that resistance remains within the range given. Depress OFF: less than 1 ohm Depress SET/ACCEL: 646 to 714 ohms Depress COAST: 114 to 126 ohms Depress RESUME: 2090 to 2310 ohms - If resistance fluctuates while steering wheel is rotated, remove steering wheel and clean slip rings (see section 37 of the shop manual). If resistances are out of range shown, refer to section 37 of the shop manual.
System operates but is erratic or unstable	Throttle linkage is binding or loose	- Check that Speed Control Servo and throttle linkage are not binding - Check that Actuator cable has as much tension as possible without holding throttle open
System doesn't operate	Open Modulating Valve	- Disconnect Speed Control Amplifier connector C222 and measure the resistance between the following wires: 144 (O/Y) and 145 (GY/BK): 40 to 75 ohms 144 (O/Y) and 146 (W/PK): 100 to 150 ohms - If resistances aren't in the ranges shown, replace the Modulating Valve

**WITH
A/C**



ENGINE COOLING FAN 33-2



**WITHOUT
A/C**

33-3 ENGINE COOLING FAN

Component	Location	Page Figure	Connector Page
A/C Controller	Behind RH side of I/P, above glove box	151- 44-4	150- 1
Cooling Fan Relay	LH front corner of engine compartment, near left headlamp ...	151- 3-6	150- 2
Cooling Fan Temperature Switch (CFI)	Upper LH side of engine, near distributor	151- 6-1	
Cooling Fan Temperature Switch (EFI)	Upper LH side of engine, near distributor	151- 2-1	
Cooling Fan Test Connector C116	LH rear of engine compartment	151- 1-1	
Cooling Fan Test Connector C117	LH rear of engine compartment	151- 1-1	
Engine Cooling Fan	Center front engine compartment, behind radiator	151- 3-6	
Fuse Link C	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Panel	Behind LH side of I/P	151- 11-1	

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

Without A/C

Voltage is applied at all times through a Non-cycling Circuit Breaker to the Cooling Fan Temperature Switch. When the engine coolant temperature rises above 221°F, the switch closes and turns on the Engine Cooling Fan.

With A/C

Voltage is applied at all times through Fuse Link C to the Cooling Fan Relay and its contacts. If engine coolant temperature rises above 221°F, the Cooling Fan Temperature Switch closes, energizing the Cooling Fan Relay. Voltage is then applied to operate the Engine Cooling Fan.

The Engine Cooling Fan can also be activated by the A/C Controller. When the air conditioning system or defroster is operating, the A/C Controller will ground pin 1 to ener-

gize the Cooling Fan Relay and activate the Engine Cooling Fan. Although the A/C Compressor will cycle on and off as the A/C Clutch Pressure Switch opens and closes, the A/C Controller will keep the Engine Cooling Fan operating continuously (as long as A/C Clutch Pressure Switch cycling intervals are less than 2 to 3 minutes long).

For further diagnostic information, refer to section 27-10 of the shop manual.

ENGINE COOLING FAN 33-4

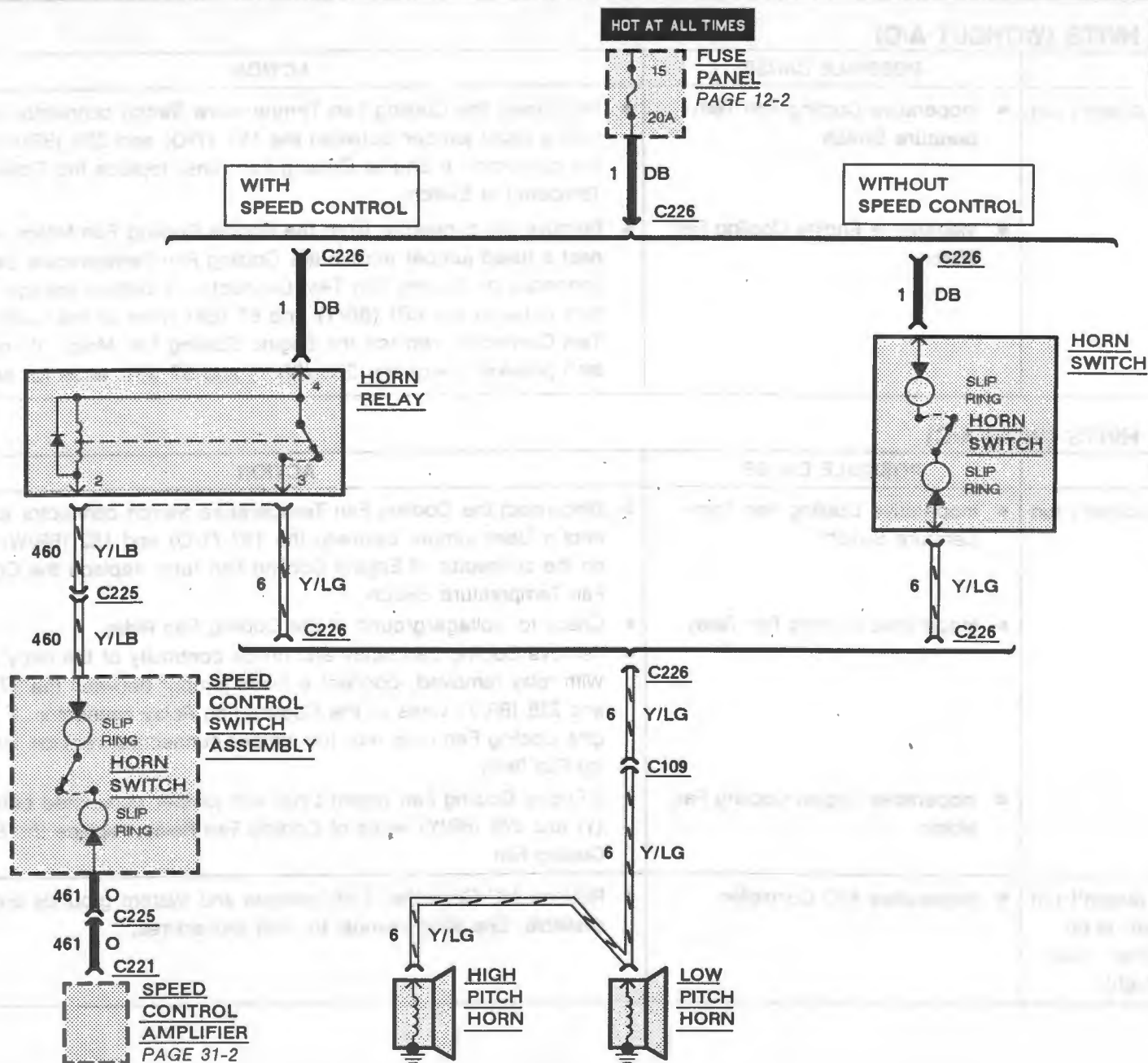
TRROUBLESHOOTING HINTS (WITHOUT A/C)

CONDITION	POSSIBLE CAUSE	ACTION
Engine Cooling Fan doesn't run	- Inoperative Cooling Fan Temperature Switch - Inoperative Engine Cooling Fan Motor	- Disconnect the Cooling Fan Temperature Switch connector and connect a fused jumper between the 197 (T/O) and 228 (BR/Y) wires on the connector. If Engine Cooling Fan runs, replace the Cooling Fan Temperature Switch. - Remove the connector from the Engine Cooling Fan Motor and connect a fused jumper across the Cooling Fan Temperature Switch connector or Cooling Fan Test Connector. If battery voltage is present between the 228 (BR/Y) and 57 (BK) wires of the Cooling Fan Test Connector, replace the Engine Cooling Fan Motor. If voltage isn't present, check the 228 (BR/Y) and 57 (BK) wires for an open.

TRROUBLESHOOTING HINTS (WITH A/C)

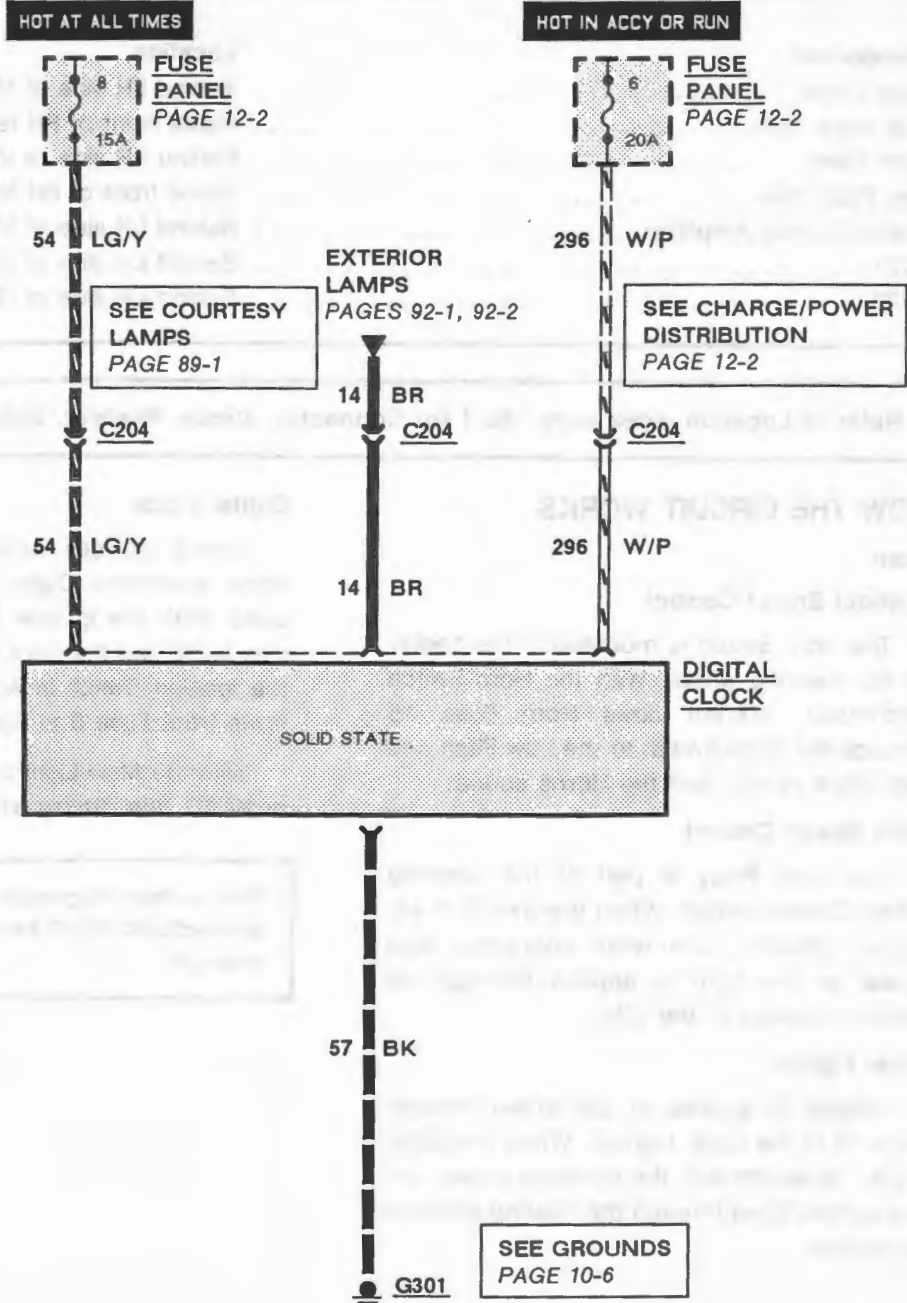
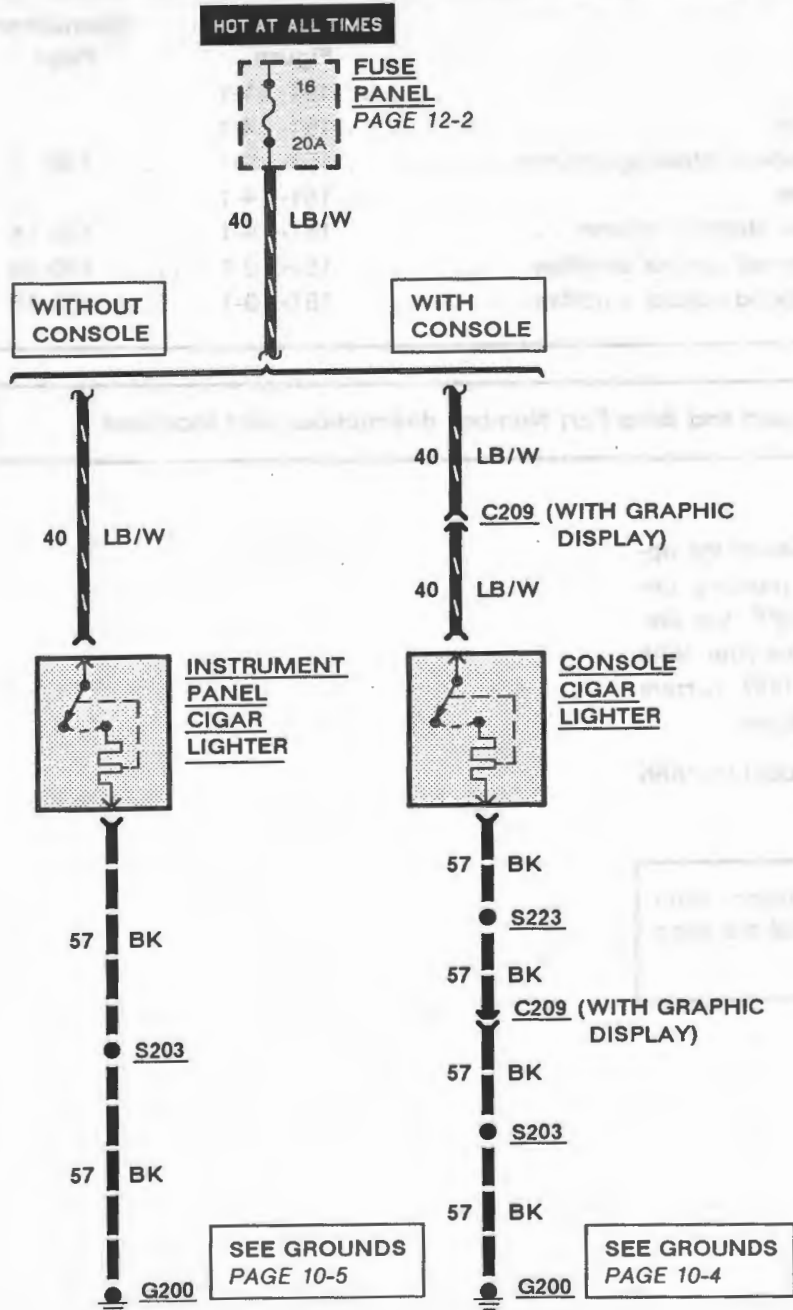
CONDITION	POSSIBLE CAUSE	ACTION
Engine Cooling Fan doesn't run	- Inoperative Cooling Fan Temperature Switch - Inoperative Cooling Fan Relay - Inoperative Engine Cooling Fan Motor	- Disconnect the Cooling Fan Temperature Switch connector and connect a fused jumper between the 197 (T/O) and 182 (BR/W) wires on the connector. If Engine Cooling Fan runs, replace the Cooling Fan Temperature Switch. - Check for voltage/ground at the Cooling Fan Relay - Remove Cooling Fan Relay and check continuity of the relay coil. With relay removed, connect a fused jumper between the 37 (Y) and 228 (BR/Y) wires of the Cooling Fan Relay connector. If the Engine Cooling Fan runs with the jumper connected, replace the Cooling Fan Relay. - If Engine Cooling Fan doesn't run with jumper connected between 37 (Y) and 228 (BR/Y) wires of Cooling Fan Relay, replace the Engine Cooling Fan
Engine Cooling Fan doesn't run when A/C compressor is on (Cooling Fan runs when coolant temperature is high)	Inoperative A/C Controller	Replace A/C Controller if all voltages and system grounds are available. See shop manual for test procedures.

44-1 HORN/CIGAR LIGHTER/DIGITAL CLOCK



*** NOTE: VEHICLES WITHOUT SPEED CONTROL WILL NOT UTILIZE THE HORN RELAY.**

HORN/CIGAR LIGHTER/DIGITAL CLOCK 44-2



44-3 HORN/CIGAR LIGHTER/DIGITAL CLOCK

Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	
High Pitch Horn	Inside front of RH fender well	151- 4-1	
Horn Relay	Behind LH side of I/P, RH side of steering column	151- 9-1	150- 2
Low Pitch Horn	Inside front of RH fender well	151- 4-1	
Speed Control Amplifier	Behind LH side of I/P, under steering column	151- 9-1	150- 15
C221	Behind LH side of I/P, on speed control amplifier	151- 9-1	150- 15
C222	Behind LH side of I/P, on speed control amplifier	151- 9-1	150- 15

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

Horn

Without Speed Control

The Horn Switch is mounted in the center of the steering wheel. With the Horn Switch depressed, current flows from Fuse 15 through the Horn Switch to the Low Pitch and High Pitch Horns, and the Horns sound.

With Speed Control

The Horn Relay is part of the Steering Wheel Control circuit. When this switch is actuated (closed), the relay energizes, and power to the horn is applied through the closed contacts of the relay.

Cigar Lighter

Voltage is applied at the times through Fuse 16 to the Cigar Lighter. When the Cigar Lighter is depressed, the contacts close, and the current flows through the heating element to ground.

Digital Clock

Fuse 8 provides current to operate the optional electronic Digital Clock memory circuits. With the Ignition Switch OFF, the display is off, but the clock still keeps time. With the Ignition Switch in ACCY or RUN, current flows from Fuse 6 to light the display.

With the Main Light Switch pulled to PARK or HEAD, the display dims.

For further diagnostic information, refer to sections 35-80 and 33-15 of the shop manual.

HORN/CIGAR LIGHTER/DIGITAL CLOCK 44-4

TROUBLESHOOTING HINTS

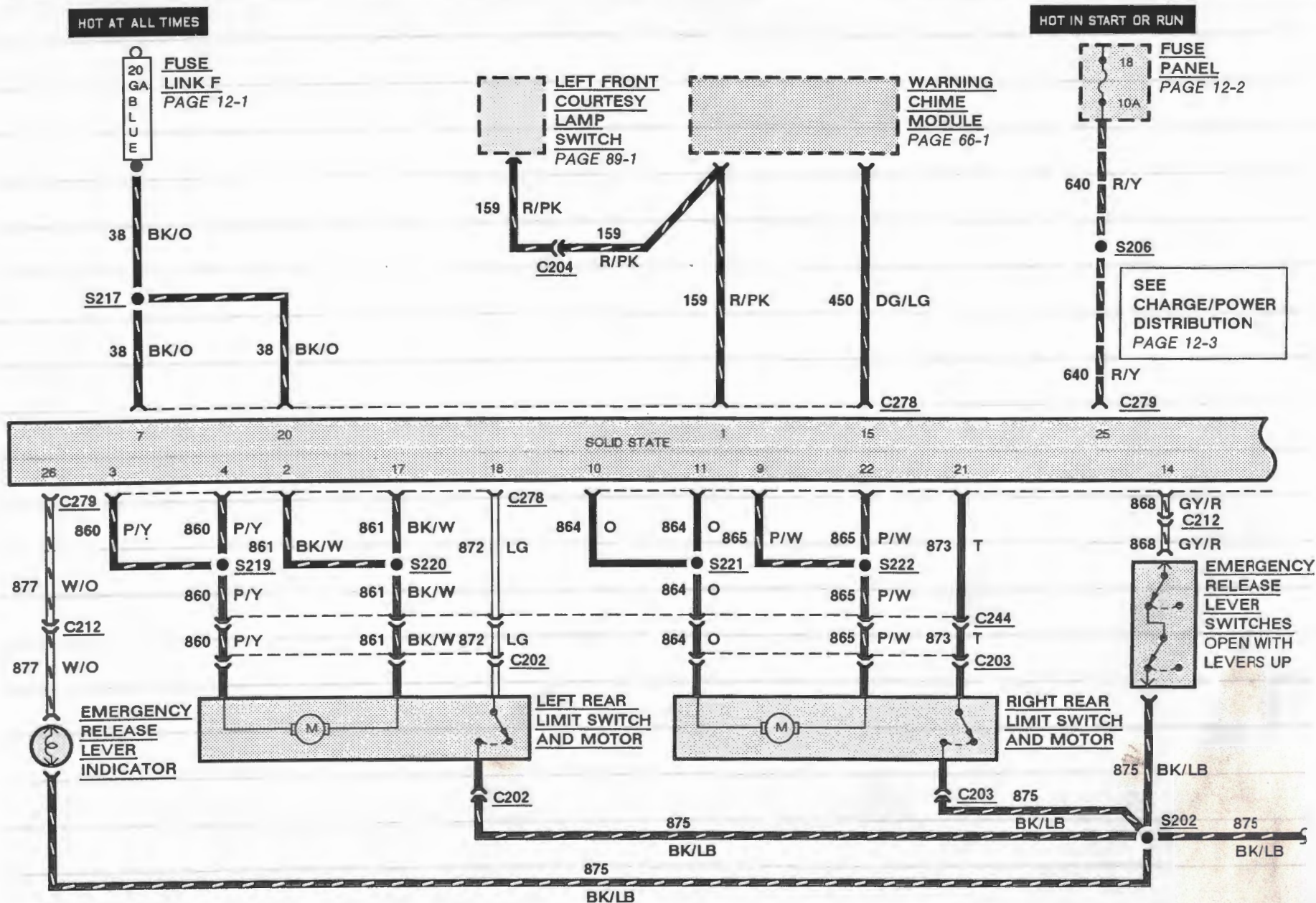
CONDITION	POSSIBLE CAUSE	ACTION
Horn doesn't sound (without Speed Control)	No voltage to Horn	- Check for voltage at 1 (DB) wire of connector C226. If battery voltage is not present, replace Fuse 15 or check the 1 (DB) wire for an open. - Attach a jumper between the connector to the Horn and the Battery. If Horn doesn't sound, turn adjusting screw 1/4 to 3/8 turn. If Horn still doesn't sound, replace Horn. - Attach a jumper across connector C226 of the Horn Switch. If Horn sounds, replace Horn Switch.
Horn doesn't work (with Speed Control)	No voltage to Horn	- Attach a jumper between the Battery and Horn connector. If Horn doesn't sound, turn adjusting screw 1/4 to 3/8 turn, then secure. If Horn doesn't sound, replace Horn. - Check for voltage at the Horn Relay connector 1 (DB) wire. Ground Horn Relay 460 (Y/LB) wire. If Horn doesn't sound, check relay. - With Horn Switch depressed, check continuity of 460 (Y/LB) wire to ground through the Speed Control Amplifier. If open, the Horn Switch is inoperative.
Horn won't shut off (with Speed Control)	Short in circuit	- If there is battery voltage between 460 (Y/LB) and 1 (DB) wires at Horn Relay, the Horn Switch may be stuck. - If there is no voltage between 460 (Y/LB) and 1 (DB) wires at Horn Relay, and Horn stops when relay is removed, relay is inoperative
Cigar Lighter doesn't work	No voltage to Cigar Lighter	- Visually inspect Fuse 16, or check the 40 (LB/W) wire for an open - Check continuity to ground at lighter shell

44-5 HORN/CIGAR LIGHTER/DIGITAL CLOCK

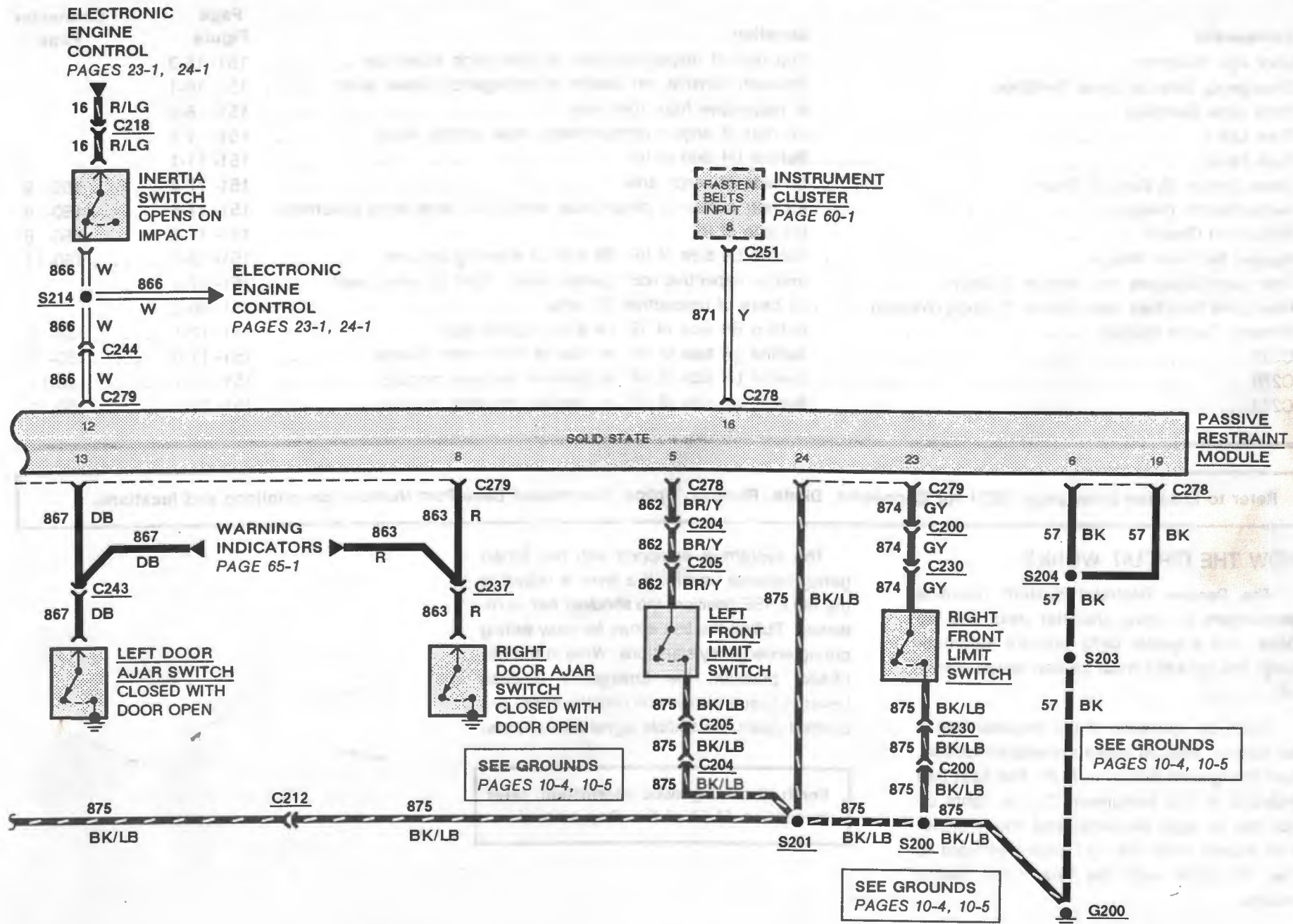
TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
Digital Clock doesn't work	No voltage to clock	- Check for voltage at 54 (LG/Y) wire of Digital Clock. If battery voltage is not present, replace Fuse 8 or check 54 (LG/Y) wire for an open. - Check for voltage at 296 (W/P) wire of Digital Clock. If battery voltage is not present, replace Fuse 6 or check 296 (W/P) wire for an open. - Check 57 (BK) wire for continuity between Digital Clock connector and G301. Repair/replace if open. - With Main Light Switch on, check that clock display dims. If inoperative, check 14 (BR) wire for short. - If clock remains inoperative, replace clock.
Clock displays inaccurate time	Battery feed interrupted	Check 54 (LG/Y) circuit for intermittent connection. Reset clock.

45-1 PASSIVE RESTRAINT SYSTEM



PASSIVE RESTRAINT SYSTEM 45-2



45-3 PASSIVE RESTRAINT SYSTEM

Component	Location	Page Figure	Connector Page
Door Ajar Switches	Top rear of respective door, in door latch assembly	151- 15-3	
Emergency Release Lever Switches	Beneath console, on bottom of emergency brake lever	151- 16-1	
Front Limit Switches	In respective front roof pillar	151- 8-2	
Fuse Link F	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Panel	Behind LH side of I/P	151- 11-1	
Inertia Switch (3 Door)(5 Door)	LH side of cargo area	151- 17-4	150- 9
Inertia Switch (Wagon)	LH rear corner of cargo area, behind LH stop lamp assembly	151- 17-5	150- 9
Instrument Cluster	LH side of I/P	151- 11-6	150- 8
Passive Restraint Module	Behind LH side of I/P, RH side of steering column	151- 12-1	150-11
Rear Limit Switches And Motors (3 Door)	Inside respective rear quarter panel, front of wheel well	151- 17-1	
Rear Limit Switches And Motors (5 Door)(Wagon)	At base of respective "B" pillar	151- 16-3	
Warning Chime Module	Behind RH side of I/P, LH side of glove box	151- 12-1	150- 6
C251	Behind LH side of I/P, on rear of instrument cluster	151- 11-6	150- 8
C278	Behind LH side of I/P, on passive restraint module	151- 12-1	150-11
C279	Behind LH side of I/P, on passive restraint module	151- 12-1	150-11

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

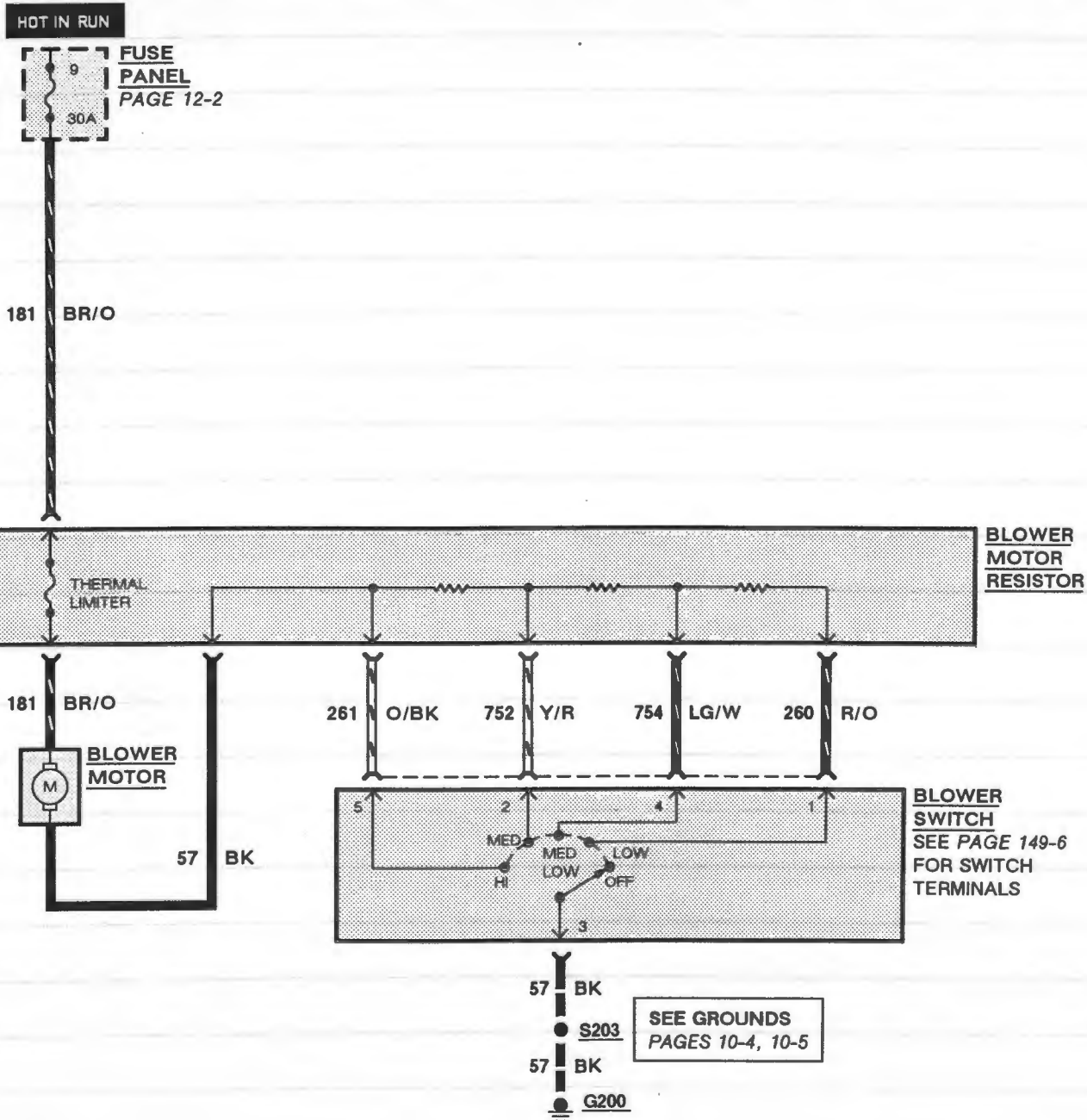
The Passive Restraint System restrains passengers by using shoulder belts and lap belts. The shoulder belts operate automatically; the lap belts must be connected manually.

Electrical operation of the shoulder belt is as follows: With all doors completely closed, turn the Ignition Switch to RUN. The Seat Belt Indicator in the Instrument Cluster lights up for four to eight seconds, and the shoulder belt moves from the "A" pillar rearward to the "B" pillar until the Rear Limit Switch opens.

The system is equipped with two Emergency Release Levers. If a lever is raised to the RELEASE position, the shoulder belt is released. Pulling the belt allows for easy exiting during emergency situations. While in the RELEASE position, the Emergency Release Lever Indicator remains on until the levers are pushed down. An audible signal also sounds.

For further diagnostic information, refer to section 41-54 of the shop manual.

53-1 HEATER



Component	Location	Page	Connector
		Figure	Page
Blower Motor (without A/C)	Behind RH side of I/P, in heater and duct assembly	151- 14-4	
Blower Motor Resistor	Behind RH side of I/P, in heater and duct assembly	151- 14-4	 150- 1
Blower Switch (without A/C)	Behind center of I/P	151- 14-1	 150- 1
Fuse Panel	Behind LH side of I/P	151- 11-1	

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

Blower

With the Ignition Switch in RUN, voltage is applied to the Blower Motor. With the Blower Switch in HI position, ground is connected to the Blower Motor for full speed operation. With the Blower Switch in OFF, there is no ground connection to the Blower Motor. With the Blower Motor in the intermediate positions, one, two or three resistors are connected between the motor and ground to control current and Blower Motor speed.

Heater

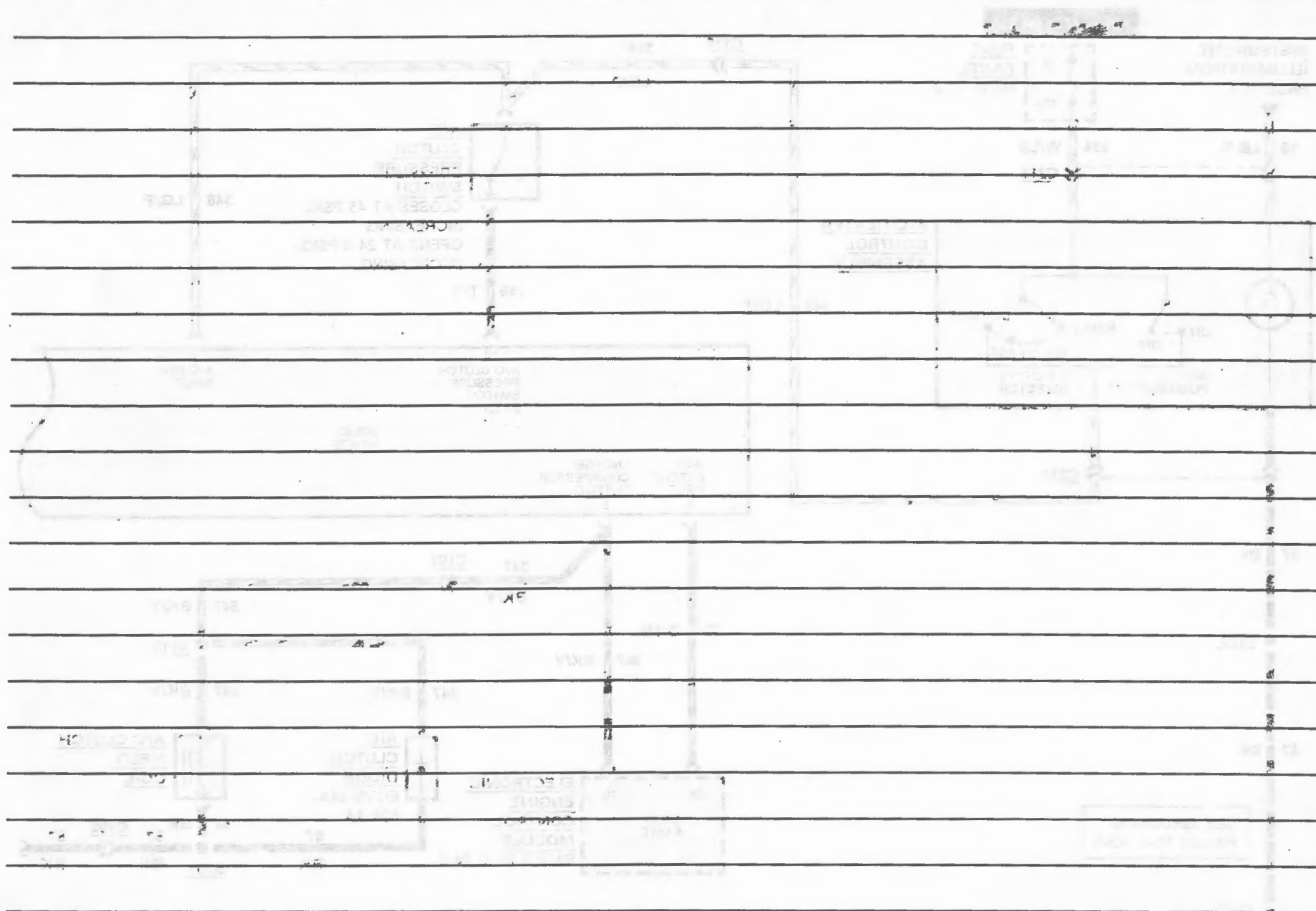
The temperature control lever moves a control cable connected to the temperature blend air door, mixing heated and unheated air.

For further diagnostic information, refer to section 36-01 of the shop manual.

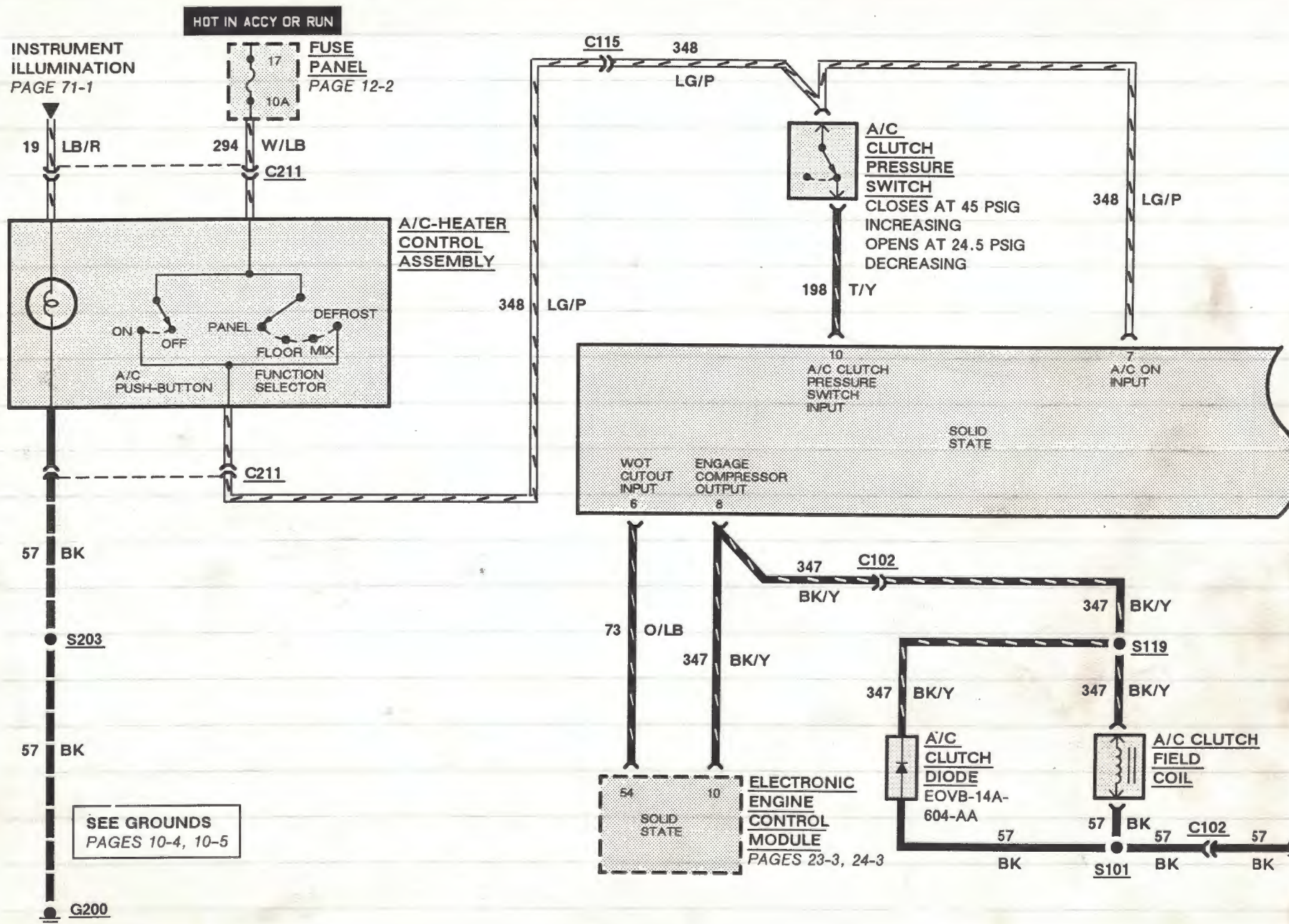
53-3 HEATER

TROUBLESHOOTING HINTS

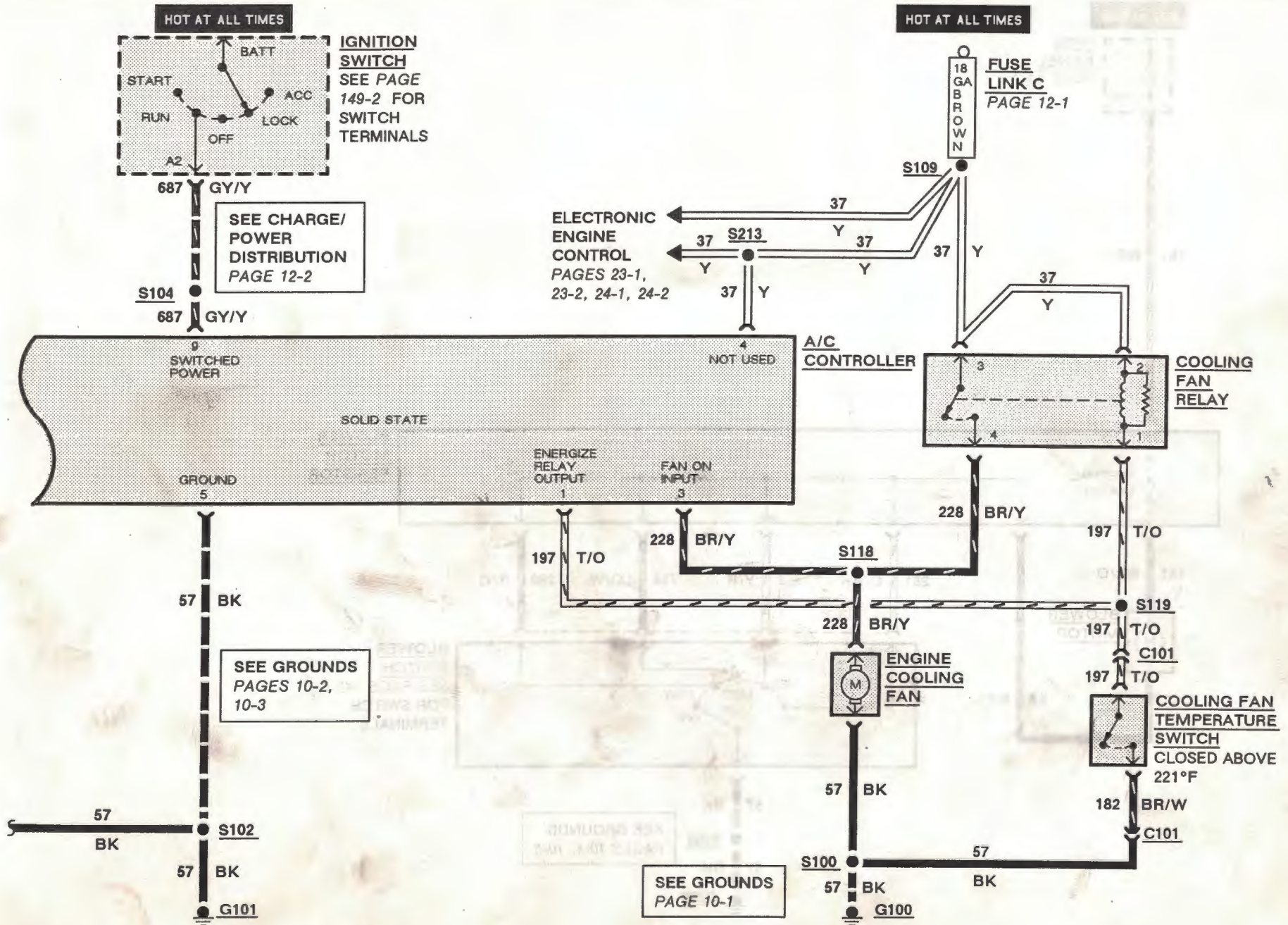
CONDITION	POSSIBLE CAUSE	ACTION
Blower doesn't run at any speed setting	- Fuse 9 open - Open ground circuit - Inoperative Blower Motor - Open Thermal Limiter	- Check Fuse 9 - Check continuity to ground at 57 (BK) wire - Set Blower Switch to HI and Ignition Switch to RUN. Disconnect the Blower Motor connector and check for battery voltage between the empty terminals on the Blower Motor Resistor. If voltage is present, replace Blower Motor. - Check continuity of Thermal Limiter in Blower Motor Resistor. If it is open, replace Blower Motor Resistor and check that all ducts are open to allow free flow of air.
Blower doesn't run in low speed mode, but runs in HI	Open Blower Motor Resistor or inoperative Blower Switch	- Check continuity of Blower Motor Resistor. Replace resistor if any portion is open. - Remove the Blower Switch connector from the Blower Switch and check continuity of each switch position. Replace Blower Switch if any position is open.



54-1 A/C-HEATER

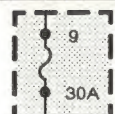


A/C-HEATER 54-2



54-3 A/C-HEATER

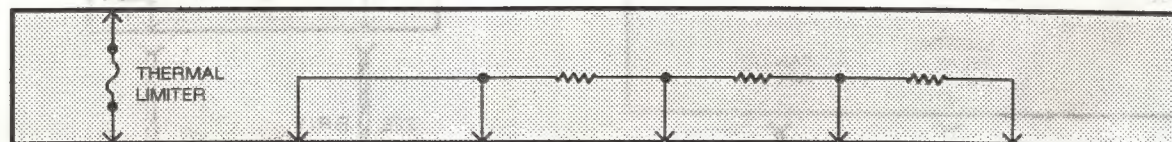
HOT IN RUN



FUSE
PANEL
PAGE 12-2

181 BR/O

Refer to TSB 90-12B-3 for REVISED SCHEMATIC - BLOWER
MOTOR CONNECTOR ADDED



BLOWER
MOTOR
RESISTOR

181 BR/O



BLOWER
MOTOR

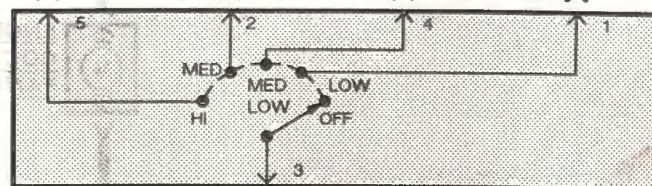
57 BK

261 O/BK

752 Y/R

754 LG/W

260 R/O



BLOWER
SWITCH
SEE PAGE 149-6
FOR SWITCH
TERMINALS

57 BK

S203

57 BK

G200

SEE GROUNDS
PAGES 10-4, 10-5

Component	Location	Page	Connector
		Figure	Page
A/C Controller	Behind RH side of I/P, above glove box	151- 14-3	150- 1
A/C Clutch Diode	RH side of engine, taped in harness		
A/C Clutch Field Coil	RH side of engine, part of compressor assembly	151- 4-2	
A/C Clutch Pressure Switch	Rear of engine compartment, attached to accumulator/dryer .	151- 4-2	
Blower Motor	Behind RH side of I/P, in heater and duct assembly	151- 14-4	
Blower Motor Resistor	Behind RH side of I/P, in heater and duct assembly	151- 14-4	150- 1
Blower Switch	Behind center of I/P	151- 14-1	150- 1
Electronic Engine Control (EEC) Module	Behind LH side of I/P	151- 10-1	150- 3
Fuse Link C	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Link G	LH side of engine compartment, in T/O to C105	151- 1-1	
Fuse Link J	LH rear of engine compartment, in T/O from C105	151- 1-1	
Fuse Panel	Behind LH side of I/P	151- 11-1	

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

Blower

With the Ignition Switch in RUN, voltage is applied to the Blower Motor. With the Blower Switch in HI position, ground is connected to the Blower Motor for full speed operation. With the Blower Switch in OFF, there is no ground connection to the Blower Motor. With the Blower Motor in the intermediate positions, one, two or three resistors are connected between the motor and ground to control current and Blower Motor speed.

Heater

The Temperature Control Lever moves a control cable connected to the temperature blend air door, mixing heated and unheated air.

A/C

The A/C-Heater Control Assembly contains the Blower Switch, A/C Push Button Switch, Function Selector Lever, and Temperature Control Lever. The clutch can be engaged, regardless of Blower Switch position by closing the A/C Push Button Switch with cooling provided from ram air. The clutch is also engaged when the Function Selector Lever is moved to defrost. The A/C Clutch Pressure Switch applies voltage to the A/C Controller. The Controller, in turn, applies voltage to the A/C Clutch Field Coil circuit, allowing the engine to drive the compressor (when the A/C Clutch Pressure Switch is closed). The Engine Cooling Fan also operates during compressor operation. Low suction pressure causes the A/C Clutch Pressure Switch to open, cutting off power to the A/C Controller.

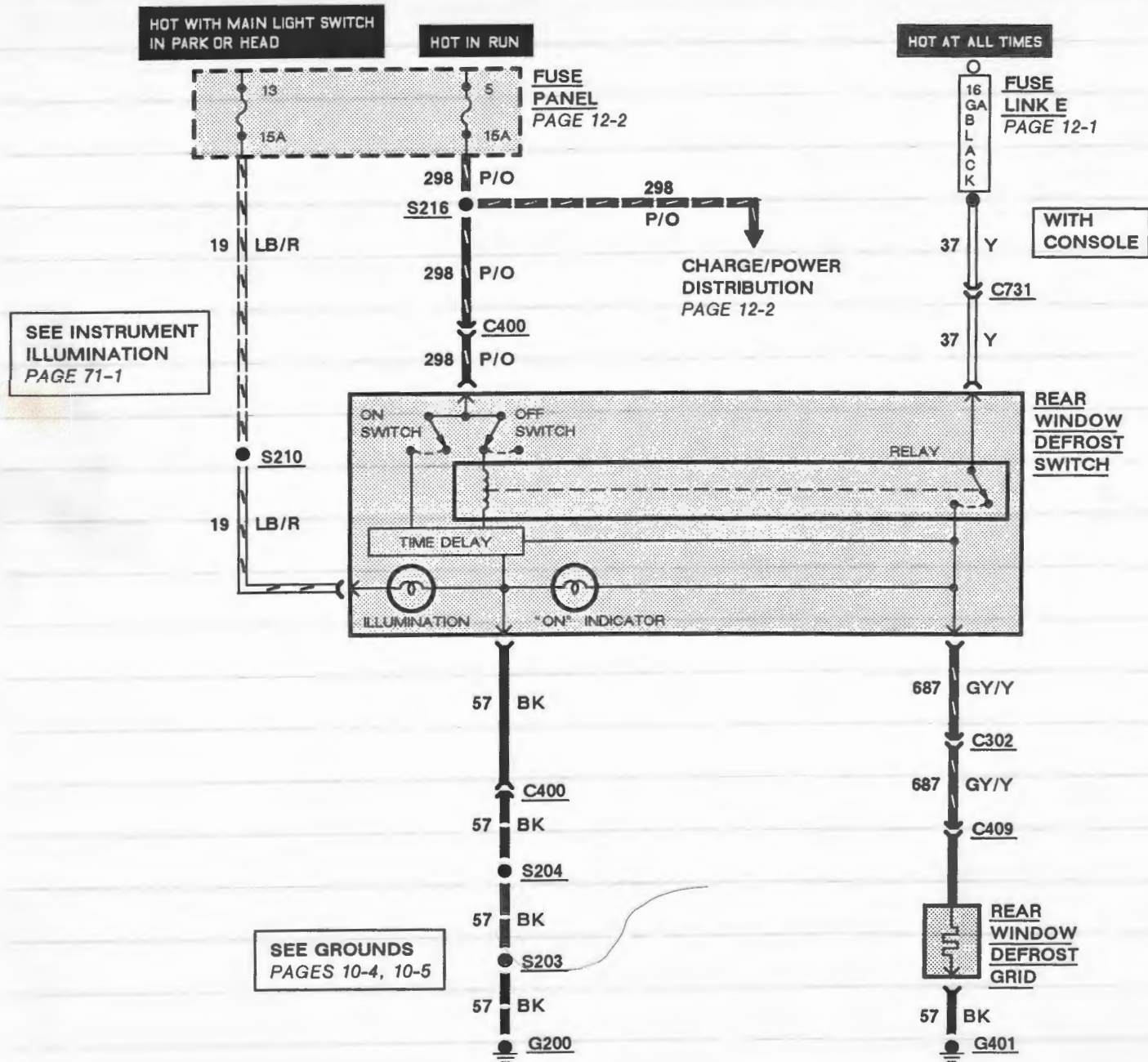
For further diagnostic information, refer to section 36-44 of the shop manual.

54-5 A/C-HEATER

TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
Blower doesn't run at any speed setting	- Fuse 9 open - Open ground circuit - Inoperative Blower Motor - Open Thermal Limiter	- Check Fuse 9 - Check continuity to ground at '57 (BK) wire - Set Blower Switch to HI and Ignition Switch to RUN. Disconnect the Blower Motor connector and check for battery voltage between the empty terminals on the Blower Motor Resistor. If voltage is present, replace Blower Motor. - Check continuity of Thermal Limiter in Blower Motor Resistor. If it is open, replace Blower Motor Resistor and check that all ducts are open to allow free flow of air.
Blower doesn't run in low speed mode, but runs in HI	Open Blower Motor Resistor or inoperative Blower Switch	- Check continuity of Blower Motor Resistor. Replace resistor if any portion is open. - Remove the Blower Switch connector from the Blower Switch and check continuity of each switch position. Replace Blower Switch if any position is open.
Compressor Clutch doesn't operate	- Fuse 17 blown - Low refrigerant charge - Inoperative A/C Controller - Open A/C Clutch Field Coil	- Replace Fuse 17 - Check for normal refrigerant charge - With A/C Clutch Pressure Switch closed, and A/C Push-Button in the A/C ON position, check for voltage at the A/C Clutch Field Coil. If voltage is present, check for an open A/C Clutch Field Coil. If voltage is not present, check continuity of 347 (BK/Y) wire between A/C Controller and A/C Clutch Field Coil. If continuity exists, replace A/C Controller. - Remove connector from A/C Clutch Field Coil and measure voltage between 347 (BK/Y) and 57 (BK) wires on the connector. If battery voltage is present, replace the A/C Clutch Field Coil.

56-1 REAR WINDOW DEFROST



REAR WINDOW DEFROST 56-2

Component	Location	Page Figure	Connector Page
Fuse Link E	LH rear of engine compartment, near starter relay	151- 1-1	
Fuse Panel	Behind LH side of I/P	151- 11-1	
Rear Window Defrost Switch	LH side of I/P	151- 11-5	150-15

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

With the Ignition Switch in RUN, the Rear Window Defrost Switch is powered through Fuse 5.

Pressing the momentary defrost switch ON closes the contacts of the Defrost Relay and starts the ten minute (approximate) timing cycle. Current now flows to the Rear Window Defrost Grid. When the Rear Window Defrost Switch is released from ON, the solid state circuitry keeps the Defrost Relay coil energized.

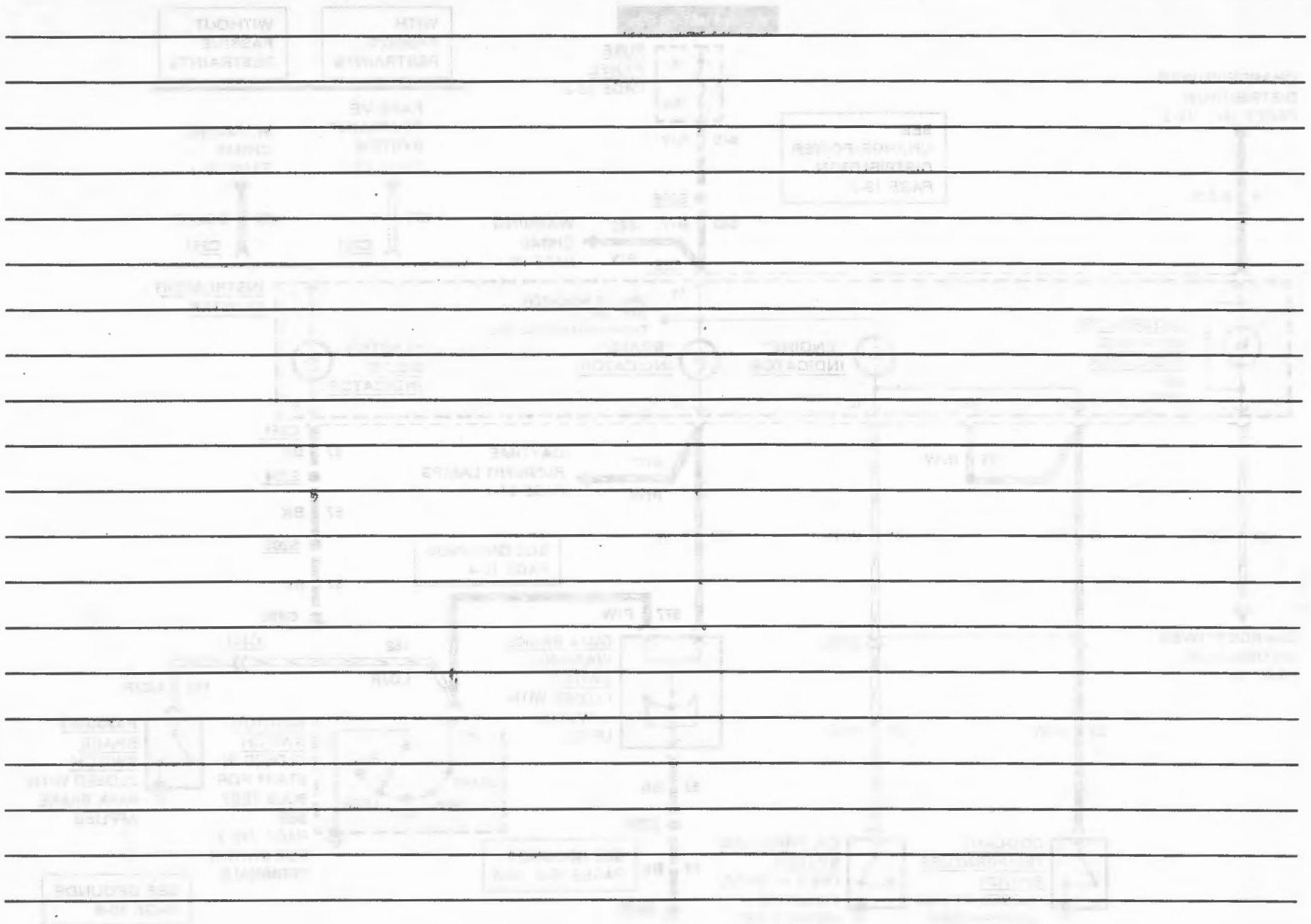
Pressing the Rear Window Defrost Switch OFF turns off the Defrost Relay. This removes power from the Rear Window Defrost circuit. If the OFF switch is not pressed, power will remain on until the time delay runs out. The coil will de-energize and remove power from the Rear Window Defrost Grid circuit.

For further diagnostic information, refer to section 36-86 of the shop manual.

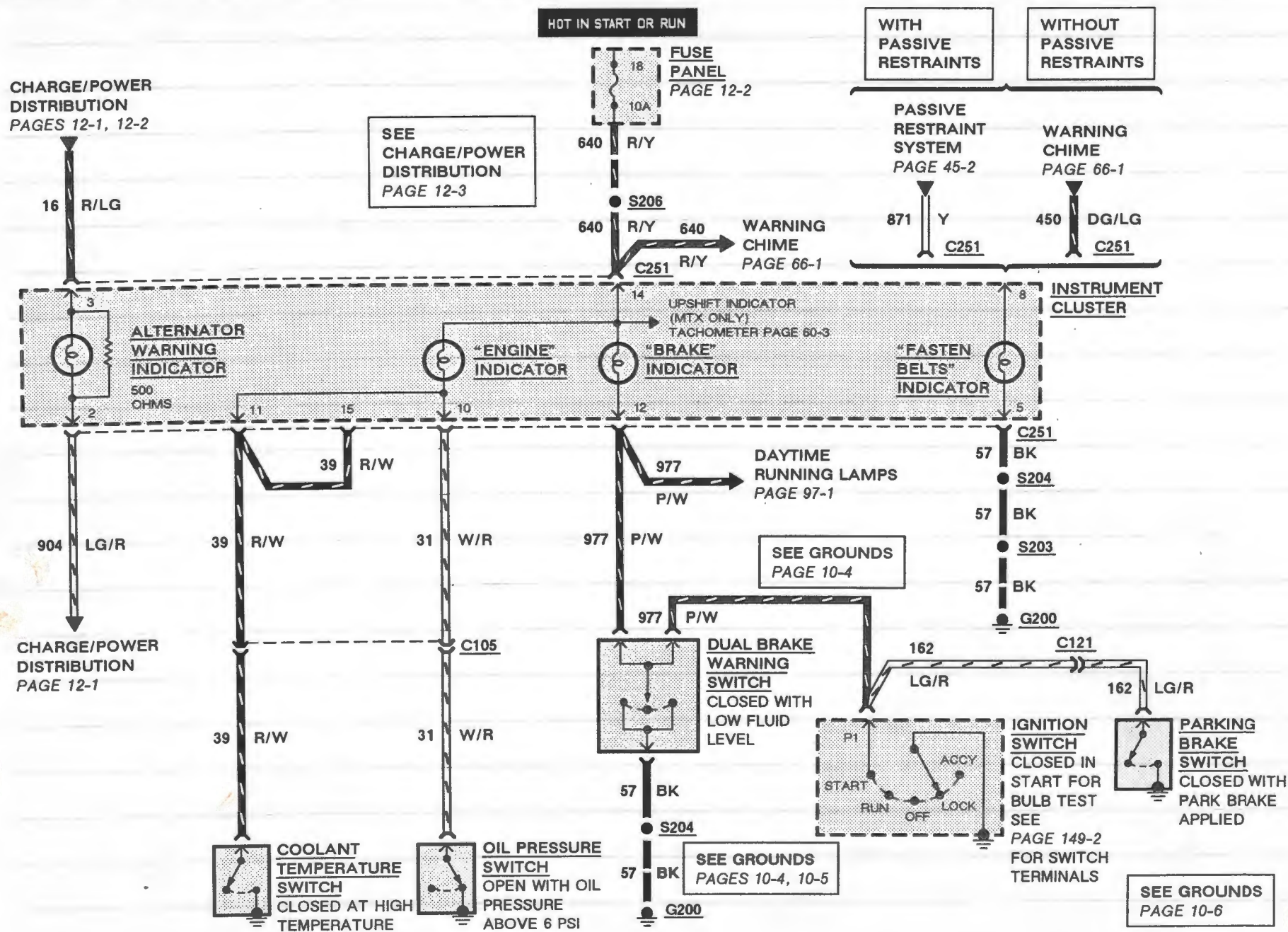
56-3 REAR WINDOW DEFROST

TROUBLESHOOTING HINTS

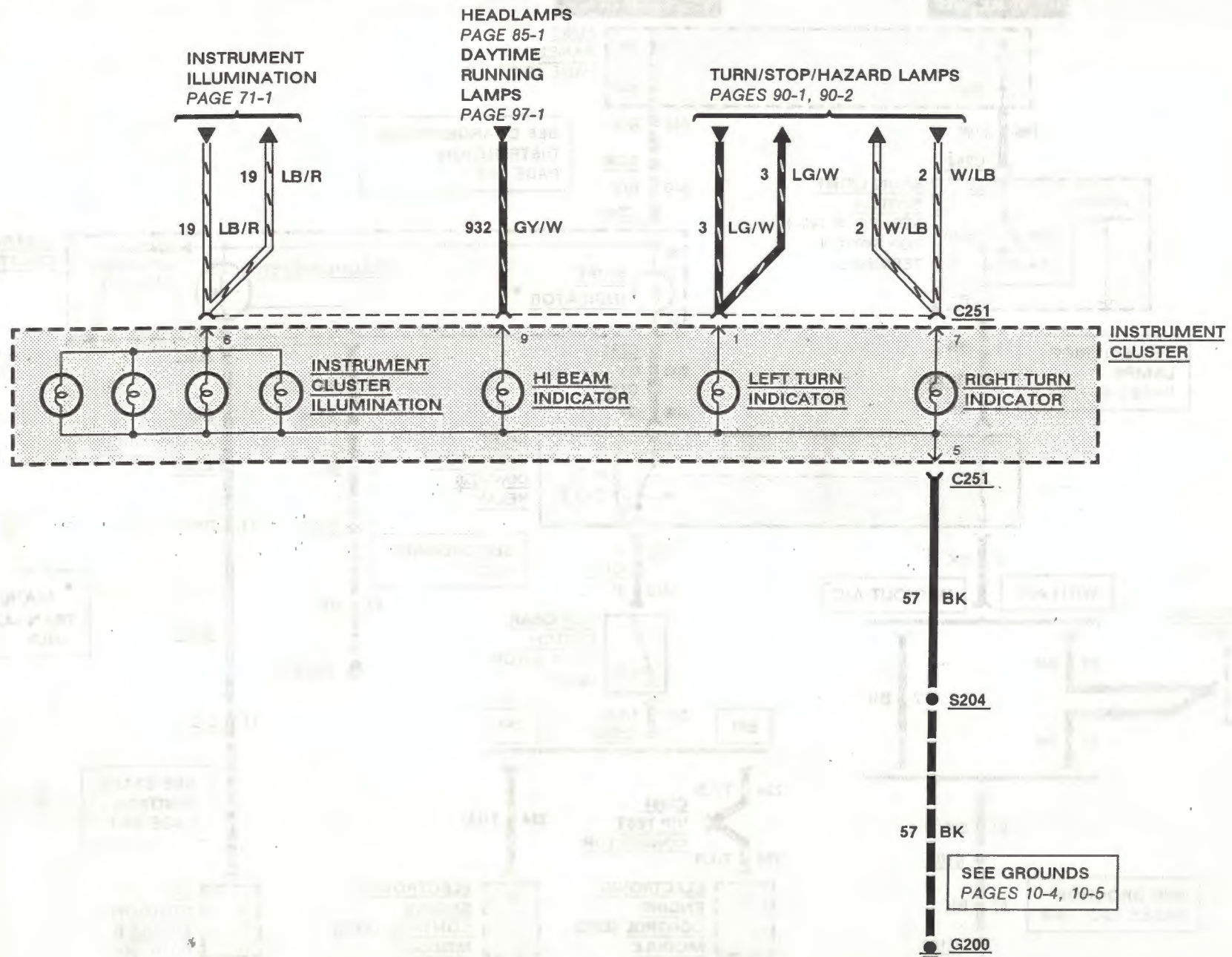
CONDITION	POSSIBLE CAUSE	ACTION
• Rear Window Defrost Grid doesn't defrost window and ON indicator doesn't light	• No voltage to Rear Window Defrost Switch	• Check Fuse Link E • Remove the Rear Window Defrost Switch connector and, with the Ignition Switch in RUN, check for voltage at the 298 (P/O) and 37 (Y) wires • Check for continuity to ground G200 at the Rear Window Defrost Switch connector
• ON indicator lights, but defroster doesn't remove frost	• No voltage to Rear Window Defrost Grid	• With the Rear Window Defrost Switch ON, check for voltage at connector C409 • Check for continuity to ground G401 from Rear Window Defrost Grid. If OK, repair/replace Rear Window Defrost Grid.



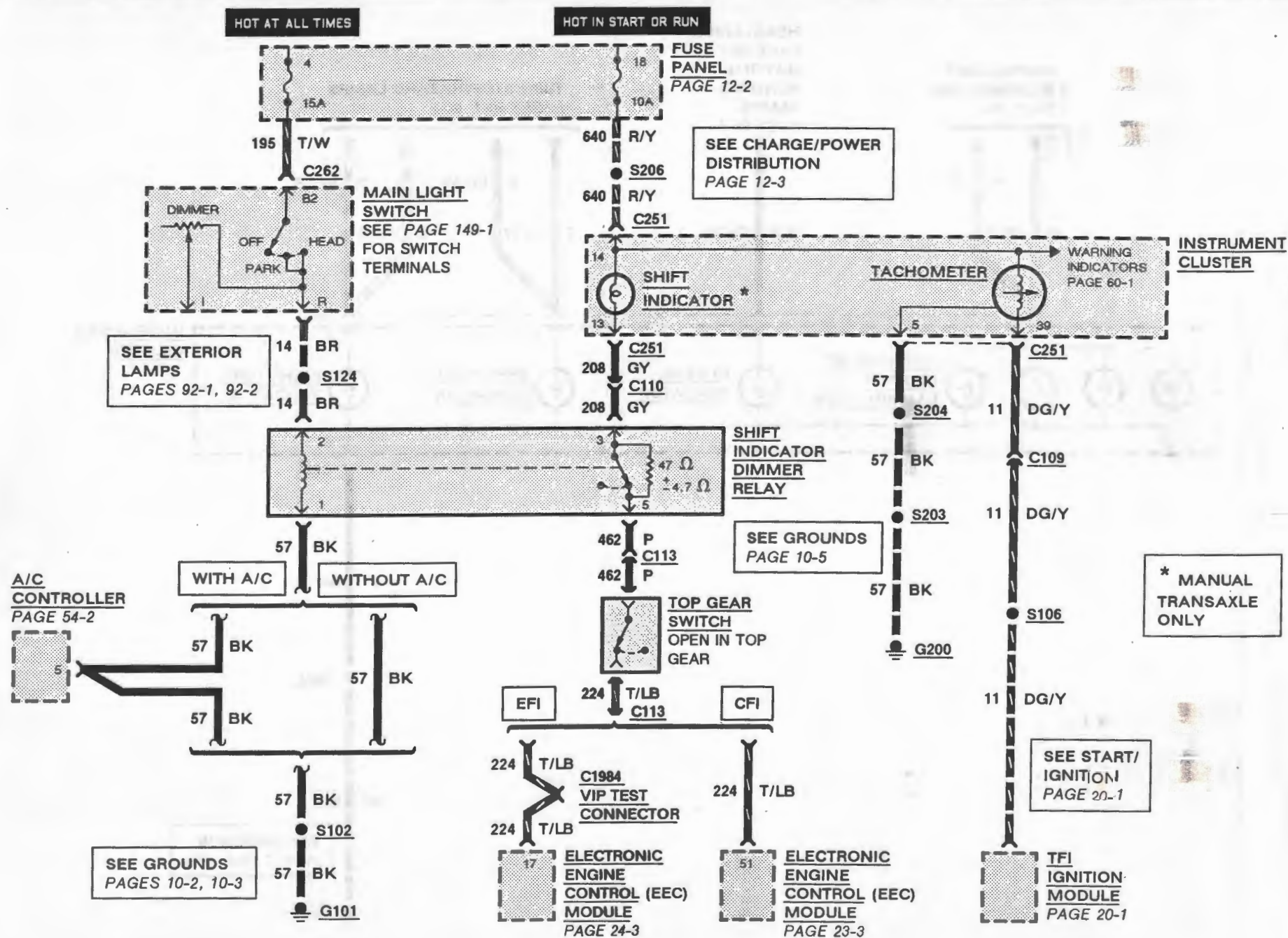
60-1 INSTRUMENT CLUSTER



INSTRUMENT CLUSTER 60-2



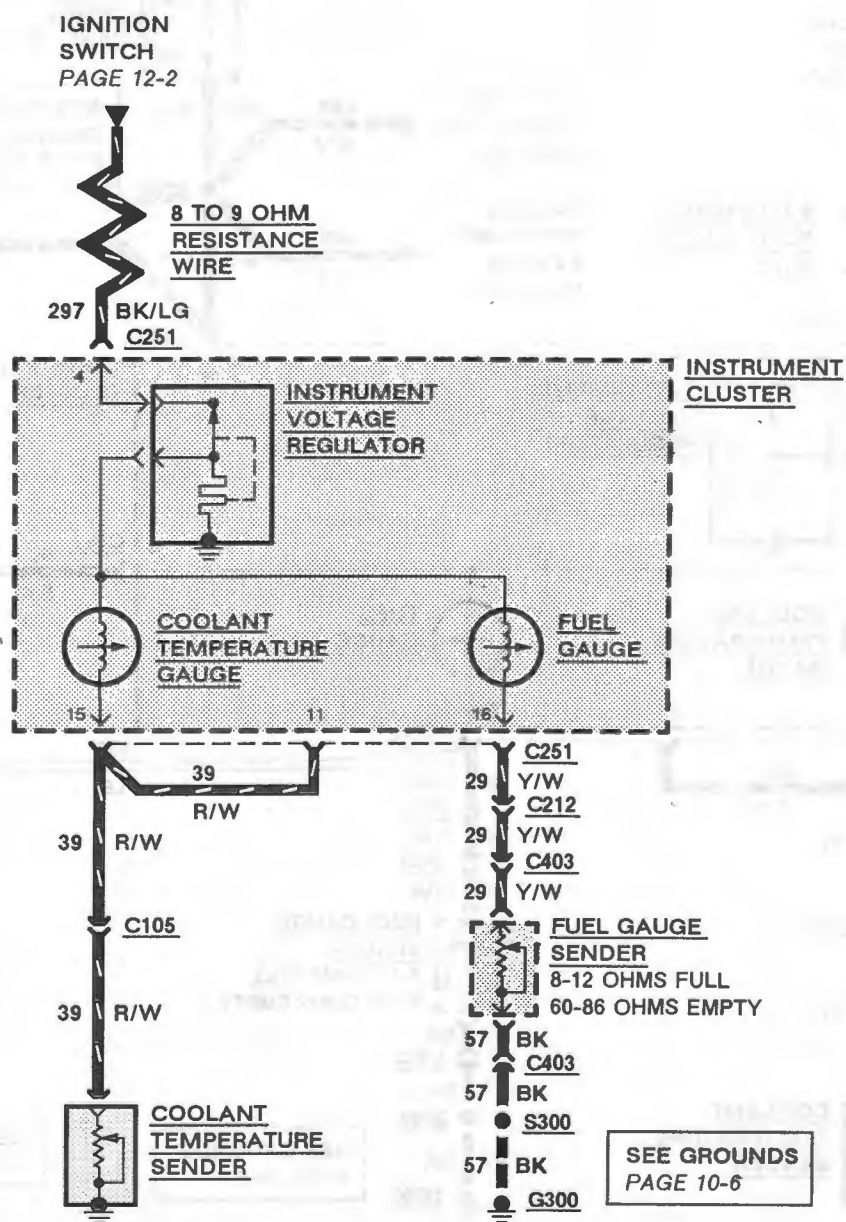
60-3 INSTRUMENT CLUSTER



INSTRUMENT CLUSTER 60-4

**WITHOUT
CONSOLE AND
GRAPHIC DISPLAY**

**NOTE: ALL WIRES GOING
TO THE INSTRUMENT
CLUSTER ARE SHIELDED
BY A 48 CIRCUIT
CONNECTED TO PIN 4
OF THE CLUSTER.**



**WITH CONSOLE
AND GRAPHIC
DISPLAY**

IGNITION
SWITCH
PAGE 12-2

8 TO 9 OHM
RESISTANCE
WIRE

297 BK/LG

INSTRUMENT VOLTAGE REGULATOR

COOLANT TEMPERATURE GAUGE

FUEL GAUGE

COOLANT TEMPERATURE SENDER

**WARNING
INDICATORS
PAGE 65-1**

**PASSIVE
RESTRAINT
SYSTEM**
PAGE 45-1

HOT IN START OR RUN

FUSE
PANEL
PAGE 12-2

**SEE CHARGE/POWER
DISTRIBUTION
PAGE 12-3**

TO LOW
COOLANT
INDICATOR
LAMP
ON PAGE 65-2

LOW FUEL WARNING MODULE

TO
CONNECTOR
C208 ON
PAGE 67-1

FUEL GAUGE
SENDER
8-12 OHMS FULL
60-86 OHMS EMPTY

SEE GROUNDS
PAGE 10-6

SEE GROUNDS
PAGES 10-4, 10-5

G200

INSTRUMENT CLUSTER 60-6

Component	Location	Page Figure	Connector Page
A/C Controller	Behind RH side of I/P, above glove box	151- 14-3	150- 1
Coolant Temperature Sender	LH rear of engine	151- 7-1	
Coolant Temperature Switch	LH rear of engine	151- 6-1	
Dual Brake Warning Switch	LH rear of engine compartment, on brake master cylinder ...	151- 1-1	
Electronic Engine Control (EEC) Module	Behind LH side of I/P	151- 10-1	150- 3
Fuel Gauge Sender	Below rear of car, top of fuel tank	151- 17-3	
Fuse Panel	Behind LH side of I/P	151- 11-1	
Ignition Switch	Top RH side of steering column	151- 13-1	150- 9
Instrument Cluster	LH side of I/P	151- 11-6	150- 8
Low Fuel Warning Module	Below center of console, near graphic display module	*	150- 7
Main Light Switch	Behind LH side of I/P	151- 8-3	150- 9
Oil Pressure Switch	Rear of engine, near oil filter	151- 7-1	
Parking Brake Switch	Below rear of console, on parking brake assembly	151- 16-1	
Shift Indicator Dimmer Relay	Behind RH side of I/P	151- 13-3	150-15
TFI Ignition Module	LH side of engine, on RH rear side of distributor	151- 6-1	150-16
Top Gear Switch	Rear of transaxle	151- 7-1	
VIP Test Connector C1984	RH side of engine compartment	151- 5-1	
C251	Behind LH side of I/P, on rear of instrument cluster	151- 11-6	150- 8

* No Figure Available

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

The ENGINE, BRAKE, and Shift Indicators receive voltage from Fuse 18.

The ENGINE Indicator lights up to indicate that the engine has reached a high temperature. It also lights up to indicate that oil pressure is low. The indicator is grounded through the Coolant Temperature Switch at high temperatures. When oil pressure is low, the indicator is grounded through the Oil Pressure Switch.

The BRAKE Indicator lights up with the Ignition Switch in START to test the bulb (this connection is closed just before reaching the START position), with the Dual Brake Warning Switch closed (low brake fluid level), and with the Parking Brake Switch closed. On vehicles equipped with Daytime Running Lamps, the DRL Module controls operation of the BRAKE Indicator for the Park Brake.

The Shift Indicator is controlled by the Electronic Engine Control (EEC) Module, which

grounds the indicator through the Top Gear Switch and Shift Indicator Dimmer Relay when the engine has reached an efficient shift point.

The Tachometer receives a constant voltage from Fuse 18 and a pulsating signal from the TFI Ignition Module when the engine is running. The Tachometer then displays this signal as revolutions per minute.

With the Ignition Switch in ACCY or RUN, the Instrument Voltage Regulator supplies a

60-7 INSTRUMENT CLUSTER

pulsating output voltage to power the Fuel and Coolant Temperature Gauges. The output (5.0 volts average) operates the Fuel and Coolant Temperature Gauges and the Low Fuel Warning Module (with Console and Graphic Display only).

The Fuel Gauge connects to the Fuel Gauge Sender. The sender is a variable resistor connected to a float in the fuel tank. When the fuel level is low, resistance is high; when fuel level is high, resistance is low.

The Coolant Temperature Gauge connects to the Coolant Temperature Sender. The sender is a temperature-sensitive variable resistor. When coolant temperature is low, resistance is high; when coolant temperature is high, resistance is low.

The Low Fuel Warning Module monitors the voltage drop across the Fuel Gauge. When the fuel tank is less than 1/4 full, the module electronic switch closes to power the Low Fuel Indicator in the Graphic Display Module. The switch also closes for a short time when the Ignition Switch is turned ON.

CAUTION

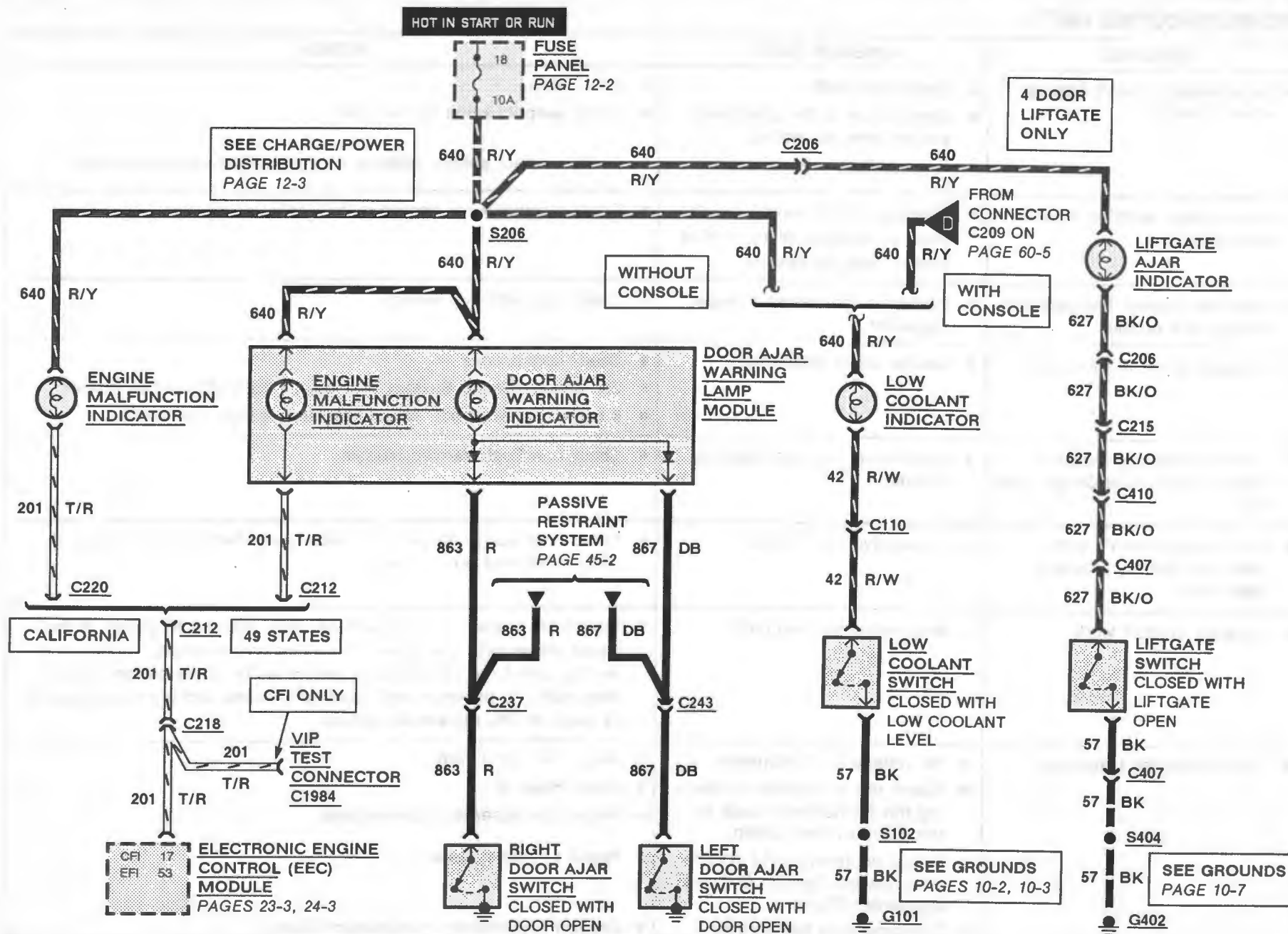
Do not ground either terminal of the Instrument Voltage Regulator.

For further diagnostic information, refer to section 33-01 of the shop manual.

TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
An Indicator doesn't light up when it should	- Burned out bulb - Open circuit to the controlling switch, relay or module - Open switch, relay or module	- Check bulb - Check suspect wires for an open - Check suspect switch, relay or module controlling the Indicator
An Indicator lights up when it shouldn't	Shorted wire to control switch, relay or module, or inoperative switch, relay or module	Check suspect wire, control switch, relay or module
Fuel and Coolant Temperature Gauges are erratic	Inoperative Instrument Voltage Regulator	Check regulator and wiring
A gauge is out of calibration	Gauge out of calibration	- Check connections - Use Bimetal Gauge System Test no. 21-0015 (follow instructions) - If tester is unavailable, check regulator, gauge and sender
Low Fuel Warning Indicator doesn't work; Fuel Gauge does work	Inoperative Low Fuel Warning Module	Check Low Fuel Warning Module
Fuel Gauge doesn't work; Low Fuel Warning Indicator does work	Inoperative Fuel Gauge	Check Fuel Gauge connections and wiring. Replace Fuel Gauge if connections and wiring are OK.
A gauge doesn't work	Inoperative sending unit	Disconnect sender, then ground sending unit wire to gauge. If the gauge shows both the minimum and maximum values, replace the sending unit if the sending unit ground is OK. If the gauge doesn't show both the minimum and maximum values and the related wiring to gauge is OK, replace the gauge.
Tachometer isn't working	- No voltage to Tachometer - Check the three clips connecting the Tachometer studs to the printed circuit board - Check continuity in 11 (DG/Y) wire between Ignition Coil and Instrument Cluster - Tachometer is inoperative	- Repair 640 (R/Y) wire - Check Fuse 18 - Repair any loose/poor connections - Repair 11 (DG/Y) wire - Replace Tachometer in Instrument Cluster

65-1 WARNING INDICATORS



WARNING INDICATORS 65-2

Component	Location	Page Figure	Connector Page
Door Ajar Switches	Top rear of respective doors, in door latch assemblies	151- 15-3	
Door Ajar Warning Lamp Module	Behind LH side of I/P	151- 12-1	150- 2
Electronic Engine Control (EEC) Module	Behind LH side of I/P	151- 10-1	150- 3
Fuse Panel	Behind LH side of I/P	151- 11-1	
Liftgate Switch	Center bottom of liftgate	151- 20-1	
Low Coolant Switch	RH side of engine compartment, in coolant overflow reservoir	151- 4-4	
VIP Test Connector C1984	RH side of engine compartment	151- 5-1	

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

The Engine Malfunction, Low Coolant, Door Ajar Warning and Liftgate Ajar Indicators receive voltage from Fuse 18.

The Engine Malfunction Indicator lights up to indicate that the engine needs service. It is grounded through the Electronic Engine Control (EEC) Module.

The Door Ajar Switches close when a door is open or not closed completely. When any switch closes, the Door Ajar Warning Indicator lights up with the Ignition Switch in START or RUN.

The Liftgate Ajar Indicator lights up when the liftgate is open. It is grounded through the Liftgate Switch.

The Low Coolant Indicator lights up when the engine coolant level is low. The indicator is grounded through the Low Coolant Switch.

For further diagnostic information, refer to section 33-01 of the shop manual.

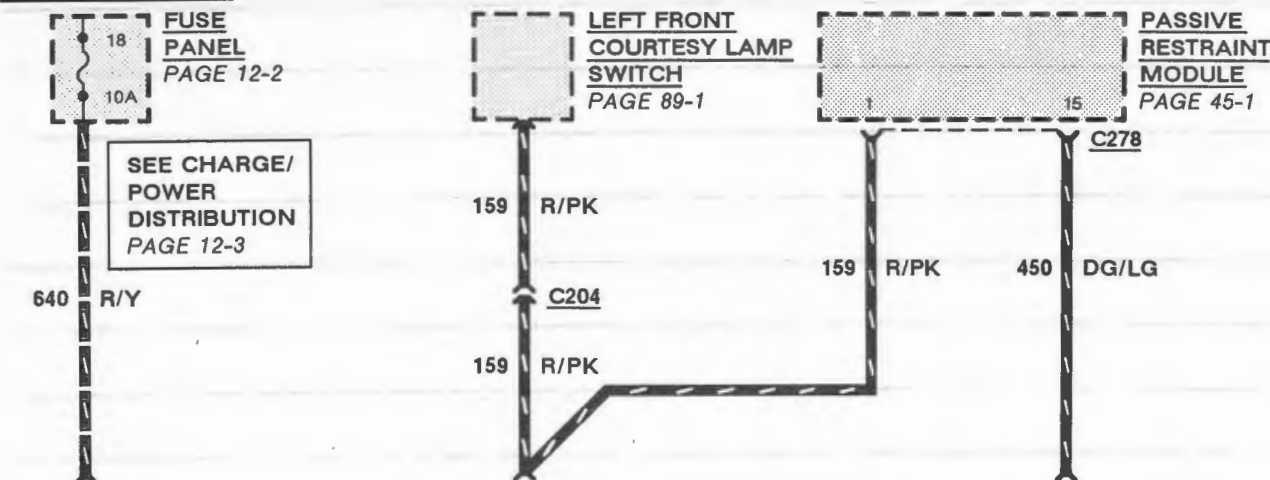
65-3 WARNING INDICATORS

TROUBLESHOOTING HINTS

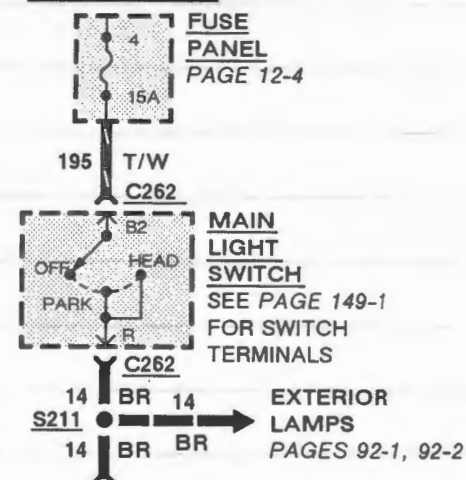
CONDITION	POSSIBLE CAUSE	ACTION
● An Indicator doesn't light up when it should	● Burned out bulb ● Open circuit to the controlling switch, relay or module ● Open switch, relay or module	● Check bulb ● Check suspect wires for an open ● Check suspect switch, relay or module controlling the Indicator
● An Indicator lights up when it shouldn't	● Shorted wire to control switch, relay or module, or inoperative switch, relay or module	● Check suspect wire, control switch, relay or module

66-1 WARNING CHIME

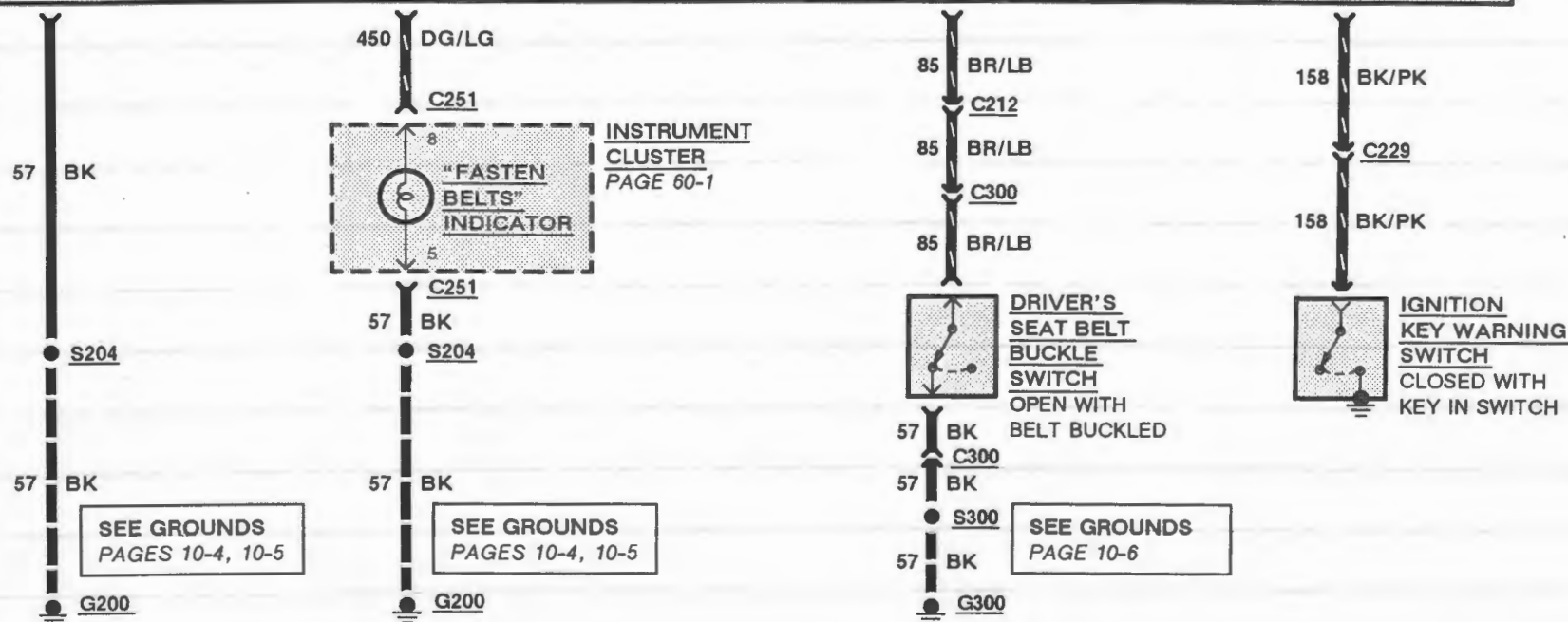
HOT IN START OR RUN



HOT AT ALL TIMES



WARNING CHIME MODULE



Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	
Ignition Key Warning Switch	Top RH side of steering column, part of ignition switch	151-13-1	
Instrument Cluster	LH side of I/P	151- 11-6	150- 8
Main Light Switch	Behind LH side of I/P	151- 8-3	150- 9
Passive Restraint Module	Behind LH side of I/P, RH side of steering column	151- 12-1	150-11
Seat Belt Switch	Inside driver's seat belt buckle	151- 16-1	
Warning Chime Module	Behind RH side of I/P, LH side of glove box	151- 12-1	150-16
C251	Behind LH side of I/P, on rear of instrument cluster	151- 11-6	150- 8
C262	Behind LH side of I/P, on main switch	151- 8-3	150- 9
C278	Behind LH side of I/P, on passive restraint module	151-1 2-1	150-11
C279	Behind LH side of I/P, on passive restraint module	151- 12-1	150-11

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

Key Warning

The Warning Chime sounds when the driver's door is open and the key is in the Ignition Switch. The chime sounds until the door is closed or the key is removed. When the driver's door is open, power is supplied to the Warning Chime Module through circuit 159. When the key is in the Ignition Switch, ground is supplied to the Warning Chime Module through circuit 158.

Fasten Belts

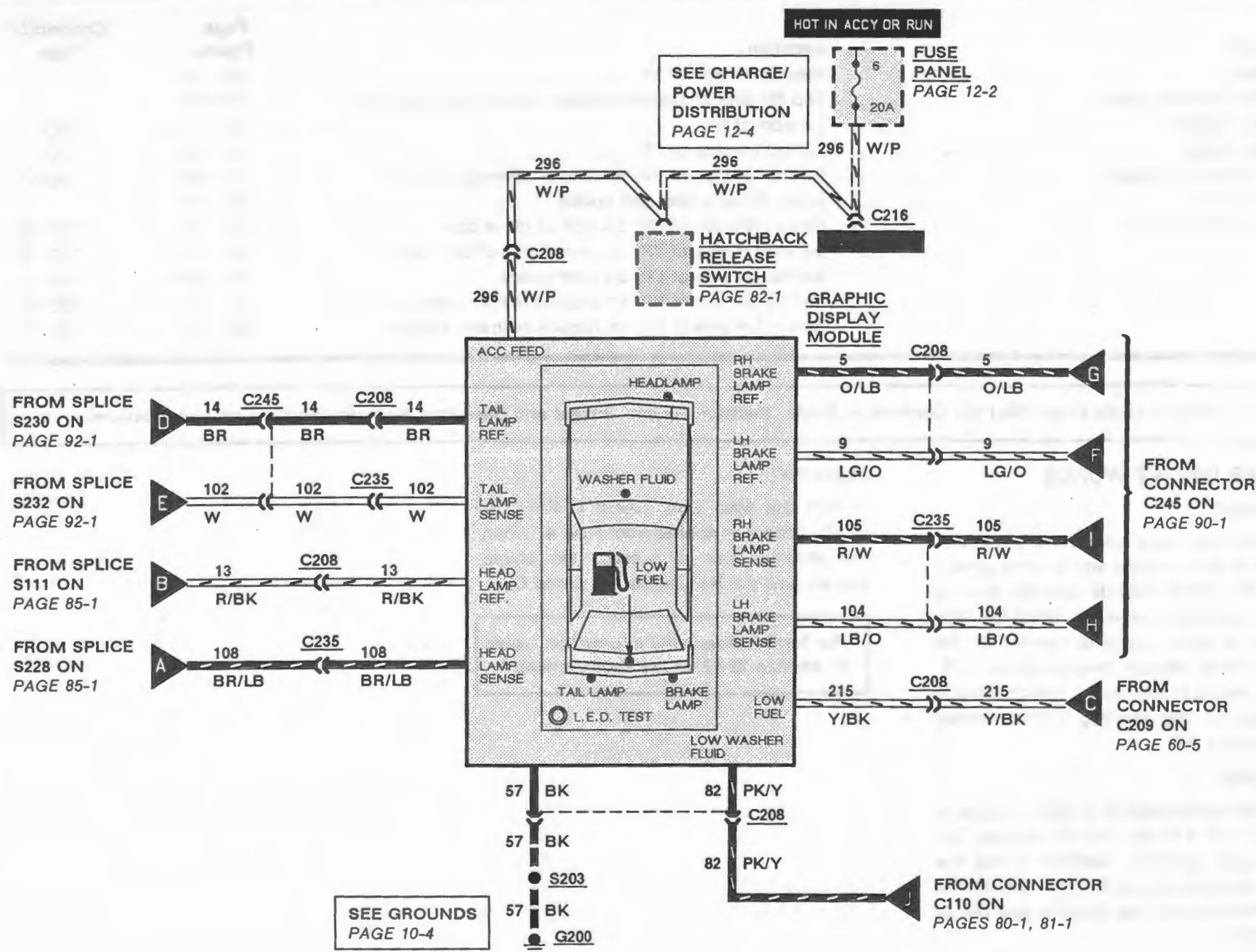
With the Ignition Switch in RUN, voltage is applied to the FASTEN BELTS Indicator for four to eight seconds, whether or not the belts are buckled. During this time period the chime sounds only if the driver's seat belt is not buckled.

Lights On

With the Main Light Switch in PARK or HEAD, voltage is applied from Fuse 4. When the driver's door is opened, the chime sounds until the Headlamps are turned OFF.

For further diagnostic information, refer to section 32-02 of the shop manual.

67-1 GRAPHIC DISPLAY



Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	
Graphic Display Module	Center of console	*	
* No Figure Available			

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

WARNING

This is a convenience feature. It is not designed as a replacement or substitute for proper periodic inspection and maintenance of the vehicle.

The Graphic Display System warns the driver of low fuel, low washer fluid, headlamp outage, tail lamp outage, and brake lamp outage. The system operates when the Ignition Switch is in RUN or ACCY.

Display Test Button

All display indicators light up when the Display Test is pushed in. The module should be serviced if one or more of the indicators do not light up.

Low Fuel

The Low Fuel Indicator lights up when the fuel level reaches approximately one-eighth (1/8) tank capacity. The indicator also lights up momentarily when the Ignition Switch is turned to the ON or ACCY position.

Washer Fluid

The Washer Fluid Indicator lights up when the washer fluid level reaches approximately one-third (1/3) reservoir capacity.

Lamp Outage

A) Tail Lamps

When the Rear Park Lamps are energized, the Graphic Display Module senses for a burned out Rear Park Lamp filament. If a lamp out condition is detected, the Graphic Display Module lights up the TAIL LAMPS LED Indicator.

B) Headlamps

When the Lo Beam Headlamps are energized, the Graphic Display Module senses for a burned out Lo Beam Headlamp filament. If a lamp out condition is detected, the Graphic Display Module lights up the HEADLAMPS LED Indicator.

C) Brake Lamps

When a turn signal is activated, the hazard lamps are activated, or the brakes are applied, the Graphic Display Module senses for a burned out Stop/Turn Lamp filament. If a lamp out condition is detected, the Graphic Display Module lights up the BRAKE LAMPS LED Indicator.

To detect a lamp out condition, the vehicle incorporates a special body wiring harness containing several resistive wires. These resistive wires feed the lamps being sensed, and their shunt voltages provide the inputs to the Graphic Display Module. When the bulbs

are operating correctly, the voltage drops across the resistive wires provide approximately 0.5 volts to the module. Note that the module has been designed to sense one-bulb systems or two-bulb systems only. In a two-bulb system, with only one bulb operating, the input voltage is approximately 0.25 volts. If both bulbs are out, the input voltage is 0. In a one-bulb system, the input voltage is at approximately 0.5 volts if the bulb is operating and 0 volts if the bulb is not operating. These voltage differences are sensed by the module, and the outputs are set accordingly.

For further diagnostic information, refer to section 33-48 of the shop manual.

CAUTION

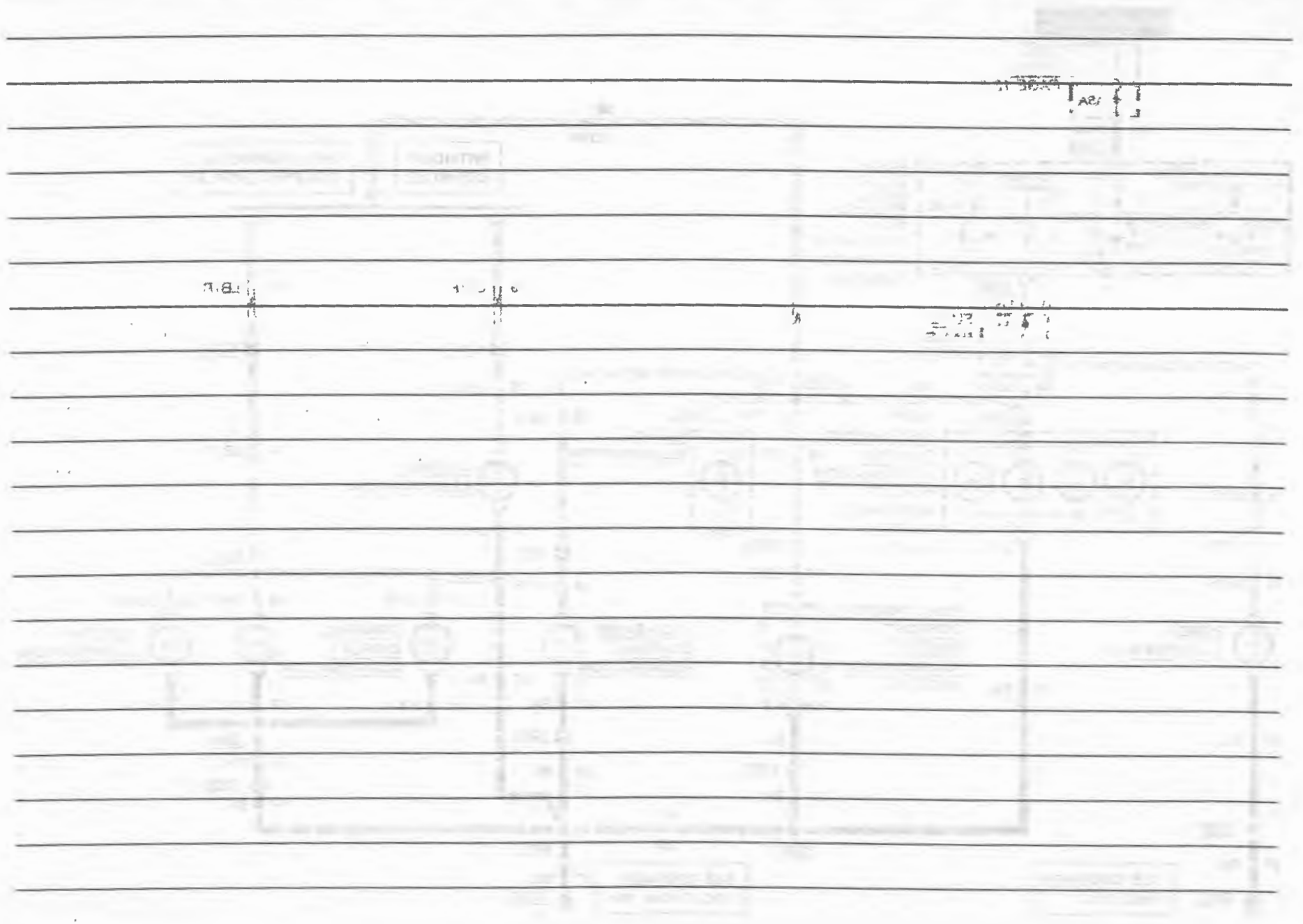
Do not hook up additional lamps or attach external trailer lamps to the vehicle without consulting an authorized dealer. Improper hook up may result in a false warning or no warning. Substitution of headlamp bulbs with anything other than original equipment (such as halogen for conventional bulbs) will result in a false warning or no warning.

Note: Do not replace resistance wire with regular wire. Replace only with complete wiring harness.

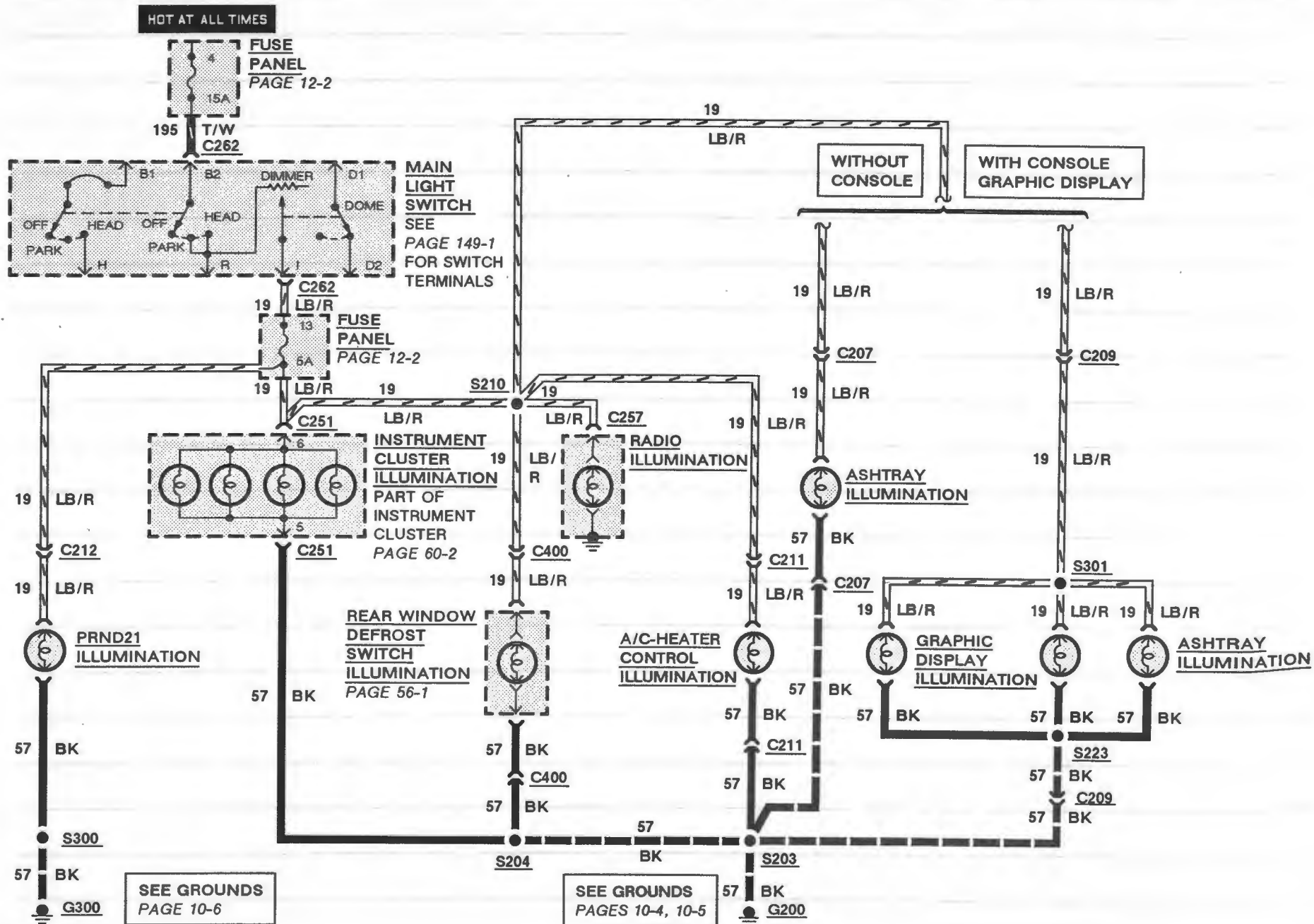
67-3 GRAPHIC DISPLAY

TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
HEADLAMP OUT message displayed with corresponding lamps working properly; Headlamp is inoperative and HEADLAMP OUT message isn't displayed	- Incorrect lamps - Inoperative Graphic Display Module - Incorrect voltage at Headlamp sense input	- Check for original equipment bulbs - Check voltage between Headlamp Reference 13 (R/BK) wire and Headlamp Sense 108 (BR/LB) wire at Graphic Display Module - If voltage is greater than .47v, replace Graphic Display Module. If voltage is less than .47v, repair necessary circuits.
TAIL LAMP OUT message displayed with corresponding lamps working properly; Tail Lamp is inoperative and TAIL LAMP OUT message isn't displayed	- Incorrect lamps - Inoperative lamps - Incorrect voltage at Tail Lamp sense input	- Check for original equipment bulbs - Check voltage between tail lamp reference 14 (BR) wire and tail lamp sense 102 (W) wire at Graphic Display Module - If voltage is greater than .48v, replace Graphic Display Module. If voltage is less than .48v, repair necessary circuits.
BRAKE LAMP OUT message displayed with corresponding lamps working properly; Brake Lamp is inoperative and BRAKE LAMP OUT message isn't displayed	- Incorrect lamps - Inoperative Graphic Display Module - Incorrect voltage at Tail Lamp sense input	- Check for original equipment bulbs - Check voltage between Right Brake Lamp Reference 5 (O/LB) wire and Right Brake Lamp Sense 105 (R/W) wire. Check voltage between Left Brake Lamp Reference 9 (LG/O) wire and Left Brake Lamp Sense 104 (LB/O) wire. - If voltage is greater than .49v, replace Graphic Display Module. If voltage is less than .49v, repair necessary circuits.
LOW FUEL and/or LOW WASHER FLUID messages are displayed incorrectly	- Inoperative Graphic Display Module - Incorrect voltage values at sense inputs	- Check connections at Graphic Display Module - Check continuity of all wires involved
No messages are displayed	No voltage at the ACCY feed input and/or poor ground at the Graphic Display Module	- Check Fuse 6 - Check voltage at 296 (W/P) wire at Graphic Display Module - Check for ground at 57 (BK) wire at Graphic Display Module - Press LED test button on Graphic Display Module. If no messages light, replace the Graphic Display Module.



71-1 INSTRUMENT ILLUMINATION



INSTRUMENT ILLUMINATION 71-2

Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	
Main Light Switch	Behind LH side of I/P	151- 8-3	150- 9
C262	Behind LH side of I/P, on main light switch	151- 8-3	150- 9

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

Voltage is applied at all times to the Main Light Switch through Fuse 4. When the Main Light Switch is set to PARK or HEAD, voltage is applied through Fuse 13 to the instrument lamps. The I/P illumination dimmer adjustment controls the voltage applied to the instrument lamps.

For further diagnostic information, refer to section 32-01 of the shop manual.

TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
Instrument illumination lamps inoperative; park lamps OK	- Fuse 13 open - Inoperative illumination rheostat	- Check Fuse 13 - Check resistance of illumination rheostat
One illumination lamp is inoperative	Open bulb	- Check continuity of bulb - Check power and ground at bulb socket

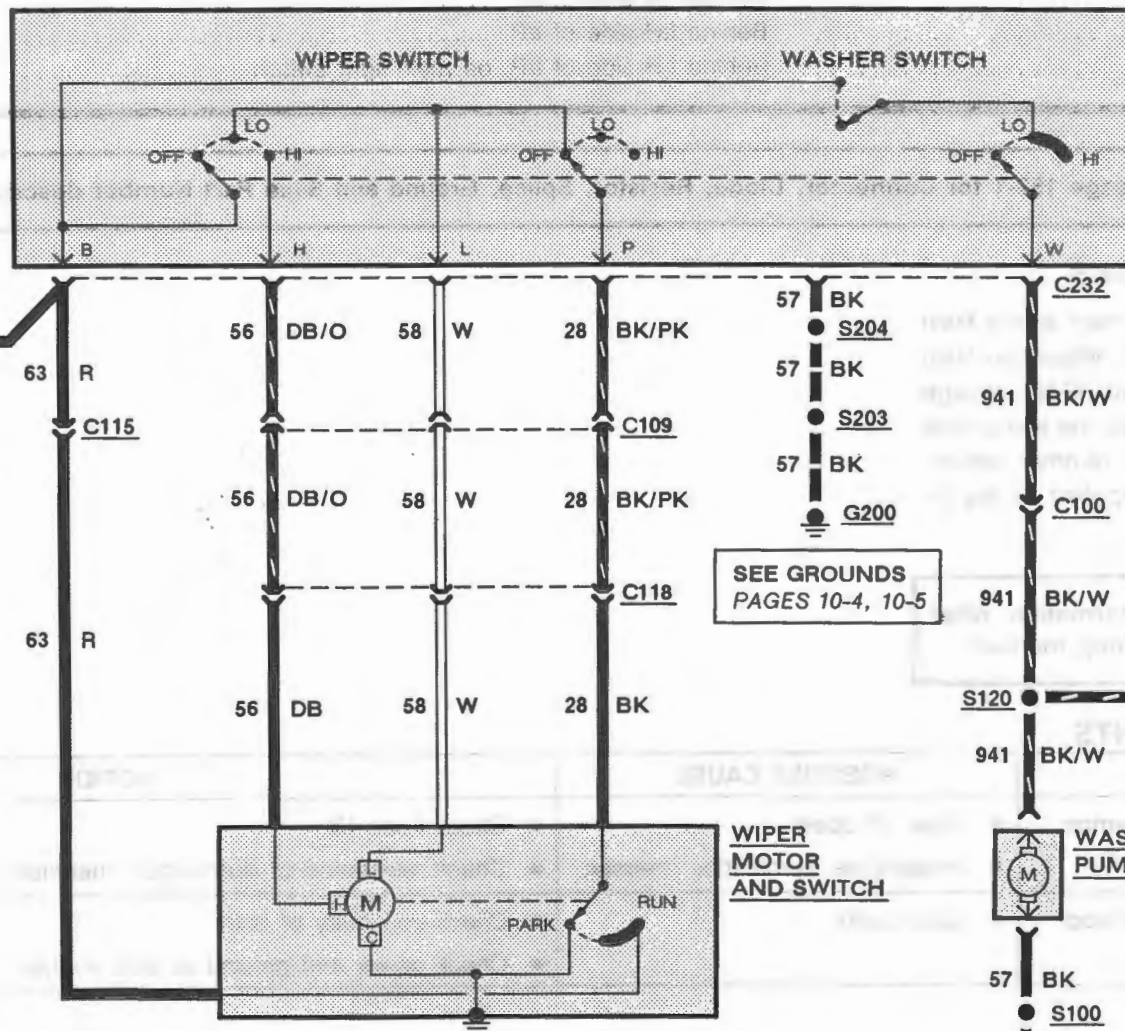
80-1 WINDSHIELD WIPER/WASHER

HOT IN ACCY OR RUN

FUSE
PANEL
PAGE 12-2



63 R



WINDSHIELD
WIPER/WASHER
SWITCH
SEE PAGE 149-3
FOR SWITCH
TERMINALS

SEE GROUNDS
PAGES 10-4, 10-5

WITH GRAPHIC
DISPLAY

LOW WASHER
FLUID LEVEL
SWITCH
CLOSED WITH
LOW WASHER
FLUID

SEE GROUNDS
PAGE 10-1

TO CONNECTOR
C208 ON
PAGE 67-1

WINDSHIELD WIPER/WASHER 80-2

Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	
Low Washer Fluid Level Switch	LH side of safety wall, bottom LH side of washer fluid reservoir	151- 1-2	
Washer Pump	LH side of safety wall, on bottom RH side of washer fluid reservoir	151- 1-2	
Windshield Wiper/Washer Switch	Top of steering column	151- 13-1	 150-16
Wiper Motor And Switch	RH front of safety wall	151- 4-5	

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

The Windshield Wiper/Washer Switch has both a Wiper Switch and a momentary Washer Switch. The Wiper Switch has three positions: OFF, LO and HI.

Washer Operation

Pulling the wiper/washer control towards the driver sends current from Circuit Breaker 2 directly to the Washer Pump motor while the Washer Switch is held closed and the Wiper Switch is in the LO or HI position.

Wiper Operation

With the Wiper Switch in LO or HI, current from Circuit Breaker 2 flows to the LO or HI terminal of the Wiper Motor, through the motor frame, which is grounded by the mounting screw to the dash panel.

Current also flows from Circuit Breaker 2 to the Washer Switch.

When parking, current flows through:

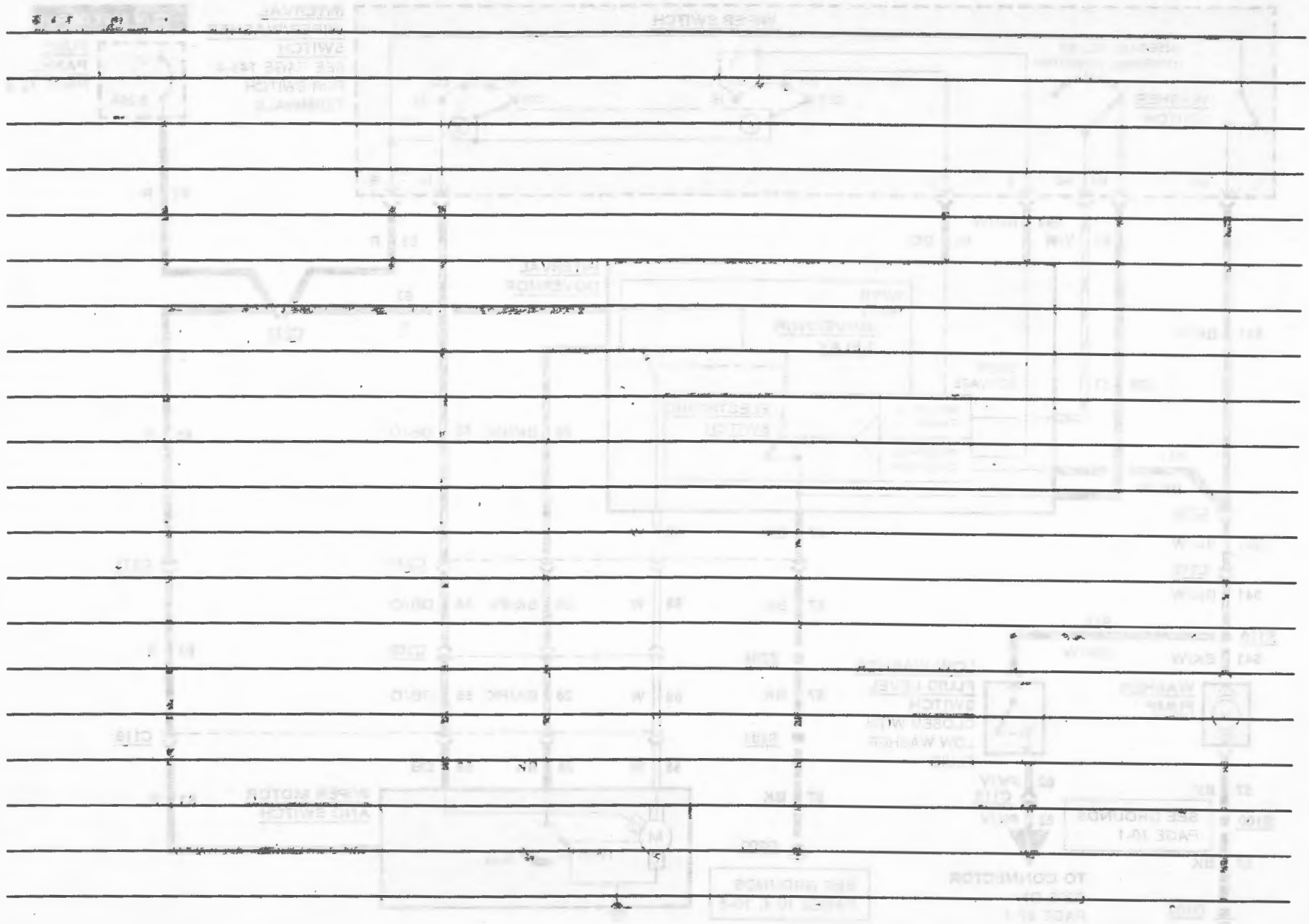
1. Circuit Breaker 2 and the 63 (R) wire to the Wiper Motor Park Switch, then back to the Wiper Switch through the 28 (BK/PK) wire;
2. The Wiper Switch and the 58 (W) wire to the Wiper Motor LO terminal; and
3. The Wiper Motor continues to run until the Motor actuates the Wiper Motor Park Switch. When the contacts move to the PARK position, the wiper LO terminal is grounded through the 58 (W) wire, the Wiper Switch, the 28 (BK/PK) wire and the Wiper Park Switch. The motor stops.

For further diagnostic information, refer to section 35-60 of the shop manual.

80-3 WINDSHIELD WIPER/WASHER

TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
Windshield Wiper/Washer doesn't operate	No voltage at Windshield Wiper/Washer Switch	- Check Circuit Breaker 2 - Check 63 (R) wire for an open to the Windshield Wiper/Washer Switch
Windshield Wipers don't operate in any speed	High resistance at Wiper Motor And Switch ground connection	Remove Wiper Motor attaching bolts. Inspect and clean ground, then remount motor.
Windshield Wipers operate in one speed only	No voltage in 56 (DB) or 58 (W) circuits at Wiper Motor And Switch	- Check voltage at harness half of Wiper Motor Switch connector — Battery voltage at 58 (W) wire in LO — Battery voltage at 56 (DB/O) wire in HI
Windshield Washer is inoperative	- Low washer fluid - Cracked or kinked washer hose - Inoperative Windshield Washer Switch - Inoperative Washer Pump	- Check fluid level - Check hoses for leaks and kinks - Check switch continuity (refer to section 35-60 of the shop manual) - Check 941 (BK/W) wire and 57 (BK) wire
Windshield Wipers don't park	- No voltage at Wiper Motor And Switch - Inoperative Park Switch	- Check voltage at harness half of Wiper Motor And Switch connector. There should be battery voltage at all times. - Check the continuity of the Wiper Motor And Switch connector



This schematic diagram illustrates the electrical system for the wiper and washer functions. The system is powered by a 12V battery (ACCY OR RUN) through a fuse panel (8.25A). The main components include:

- Washer Switch:** Controls the washer pump motor (M) through a variable resistor (R1, R2) and a low washer fluid level switch (C110).
- Wiper Switch:** Controls the wiper motor (M) through an interval governor (GOVERNOR RELAY, ELECTRONIC SWITCH) and a wiper reset switch (C110).
- Interval Governor:** A complex unit containing a timer activate switch, interval timer, interval override, and wiper reset switch.
- Wiper Motor and Switch:** Controls the wiper motor (M) through a wiper reset switch (C110) and a wiper motor switch (C118).
- Washer Pump:** A motor (M) that pumps washer fluid.
- Low Washer Fluid Level Switch:** A switch (C110) that closes when the washer fluid level is low.
- Wiper Motor:** A motor (M) that moves the wiper blades.

The diagram shows the wiring paths for various components, including the washer pump, wiper motor, and interval governor, and their connection to the battery and ground. Key components like the washer pump, wiper motor, and interval governor are shown in detail. The diagram also includes a fuse panel and a battery connection point. The wiring is color-coded and labeled with numbers (e.g., 57, 58, 63, 941) and letters (e.g., BK, W, DB, PK, Y, R, G, L, I, H, B, A, B).

INTERVAL WIPER/WASHER 81-2

Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	
Interval Governor	Attached to RH side of steering column brace	151- 11-4	
Low Washer Fluid Level Switch	LH side of safety wall, bottom LH side of washer fluid reservoir	151- 1-2	
Washer Pump	LH side of safety wall, on bottom RH side of washer fluid reservoir	151- 1-2	
Wiper Motor And Switch	RH front of safety wall	151- 4-5	

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

The Interval Wiper/Washer System features LO speed, HI speed, and Interval wiping functions. With the wipers in the Interval position, wipes are spaced two to ten seconds apart.

The Interval Wiper/Washer Switch has a momentary Washer Switch, a four-position Wiper Switch, and a Variable Resistor to set Interval time.

Washer Operation

Activating the Wiper/Washer Switch sends current from Circuit Breaker 2, through the Washer Switch, to the Washer Pump.

LO/HI Speed Wiper Operation

When the Wiper Switch is in the LO (or HI) position, section A of the Wiper Switch powers the interval override input so that the Electronic Switch and the Governor Relay are pulled in continuously. Wiper Motor current then flows through Circuit Breaker 2 and the

energized contacts of the Governor Relay to the L terminal of the Wiper Motor. Power is applied to the H terminal of the Wiper Motor through section B of the Wiper Switch for high speed operation.

Interval Wiper Operation

During interval operation, the wipers make single wipes at low speed separated by a variable length pause.

When first switched to the interval position, section A of the Wiper Switch activates the Interval Timer. The Interval Timer momentarily closes the Electronic Switch, energizing the Governor Relay. Current flows to the Wiper Motor L terminal through the energized contacts of the Governor Relay. Ground is connected to terminal C of the Wiper Motor.

As the Wiper Motor turns, the Wiper Motor Switch changes from the grounded PARK position to the hot RUN position. Current now flows through the 63 (R) wire (the RUN contact of the Wiper Motor Switch) and resets

the Interval Timer, which opens the Electronic Switch. The current path continues through the de-energized Governor Relay contact to the L terminal of the Wiper Motor. Wiping continues until the final wipe is completed. The Wiper Motor Switch returns to the PARK position contact, which is not powered, and the Wiper Motor Stops. After a pause (controlled by the variable resistor), the Interval Timer pulls in the Governor Relay to start another wipe.

When parking is complete, the Wiper Motor is braked to a stop by shunting the L and C terminals through the Wiper Motor Switch. Braking takes place when the Wiper Motor Switch moves to the PARK position. The Wiper Motor L terminal is connected to terminal C through the PARK contact of the Wiper Motor Switch and the de-energized contact of the Governor Relay.

For further diagnostic information, refer to section 35-60 of the shop manual.

81-3 INTERVAL WIPER/WASHER

TROUBLESHOOTING HINTS

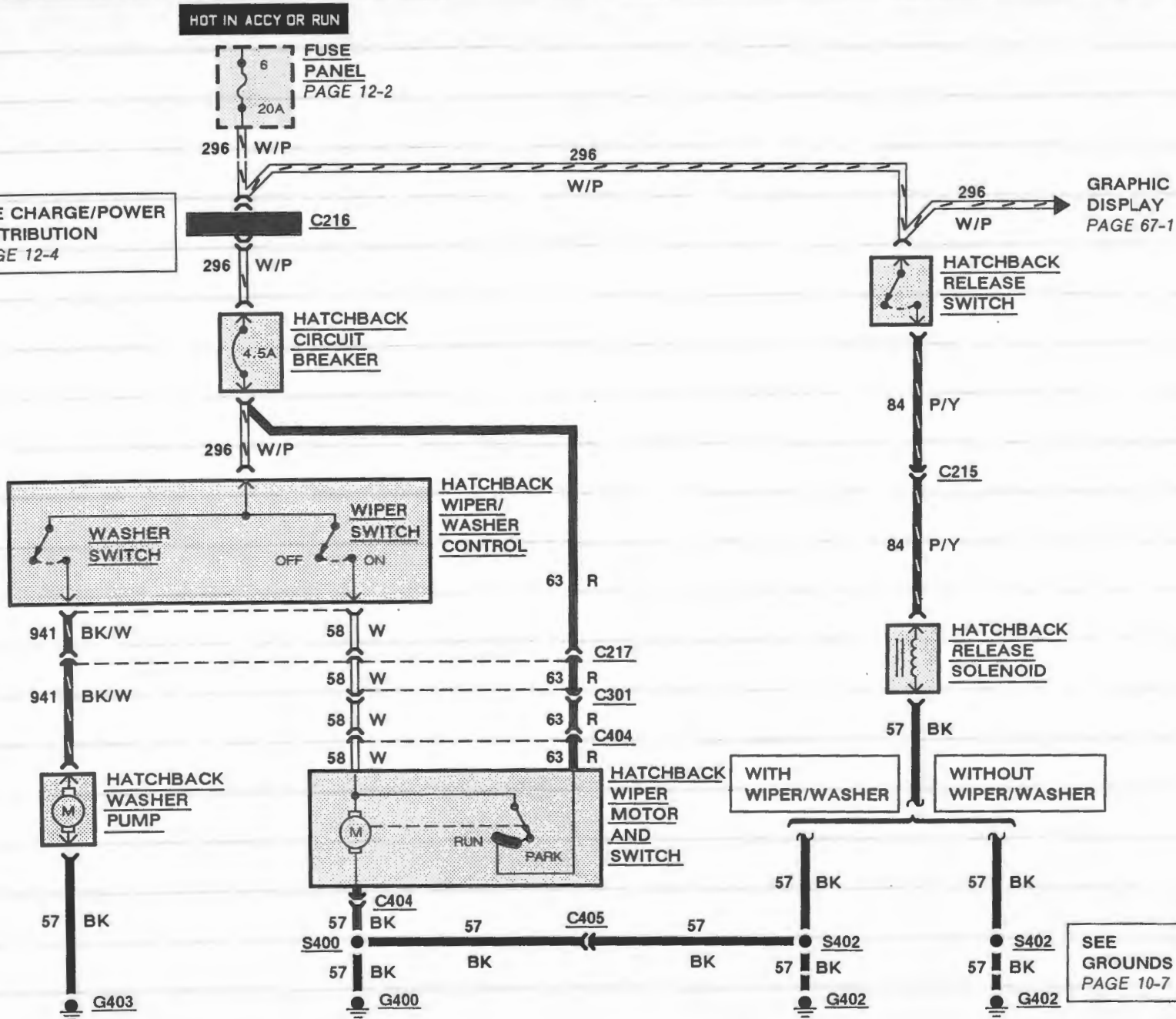
CONDITION	POSSIBLE CAUSE	ACTION
Wipers don't operate in Interval mode	Open circuit in Interval Adjust control	Remove the Interval Wiper/Washer Switch connector and measure resistance between terminals R1 and R2 while turning the Interval Adjust Control through its entire range. If resistance varies uniformly, replace the Interval Governor. If resistance doesn't vary uniformly or circuit is open in certain positions, replace the Wiper Switch.
Wipers don't operate in LO	Inoperative Interval Governor	Disconnect connector C232. If battery voltage is not present at the 58 (W) wire of the harness connector with the Wiper Switch in LO, replace the Interval Governor. If voltage is present, replace the Wiper Motor And Switch.
Wipers don't operate in HI	Inoperative Interval Wiper/Washer Switch	Disconnect connector C232. If battery voltage is not present at the 56 (DB/O) wire of the harness connector with the Wiper Switch in HI, replace the Interval Wiper/Washer Switch. If voltage is present, replace the Wiper Motor And Switch.
Windshield Washer is inoperative	- Low washer fluid - Cracked or kinked washer hose - Inoperative Windshield Washer Switch - Inoperative Washer Pump	- Check fluid level - Check hoses for leaks and kinks - Check switch continuity (refer to section 35-60 of the shop manual) - Check 941 (BK/W) wire and 57 (BK) wire
Windshield Wipers don't park	- No voltage at Wiper Motor And Switch - Inoperative Park Switch	- Check voltage at harness half of Wiper Motor And Switch connector. There should be battery voltage at all times. - Check continuity at motor half of Wiper Motor And Switch connector, which should be open when Wipers are parked. There should be continuity when the Wipers are on windshield.

81-4

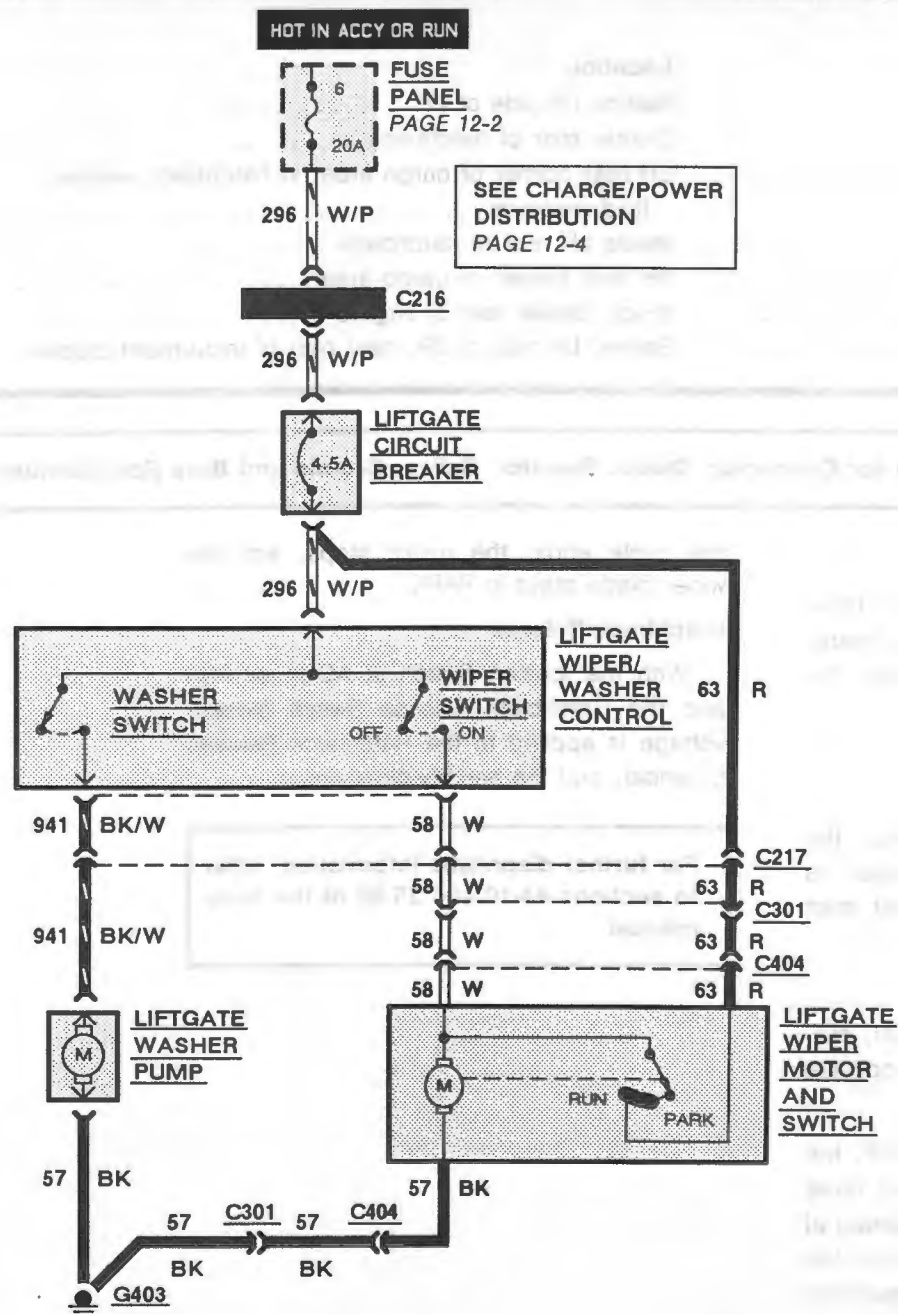
**3 DR, 5 DR
HATCHBACK**

HOT IN ACCY OR RUN

FUSE
PANEL
PAGE 12-2



4 DR LIFTGATE



82-3 LIFTGATE/HATCHBACK WIPER/WASHER

Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	
Hatchback Release Solenoid	Center rear of hatchback	151- 18-6	
Hatchback Washer Pump	LH rear corner of cargo area, in hatchback washer fluid reservoir	151- 17-6	
Hatchback Wiper Motor And Switch	Inside LH rear of hatchback	151- 21-1	
Liftgate Washer Pump	RH rear corner of cargo area	151- 18-3	
Liftgate Wiper Motor And Switch	Inside center rear of liftgate	151- 20-2	
Liftgate/Hatchback Circuit Breaker	Behind LH side of I/P, near rear of instrument cluster	151- 8-3	

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

With the Ignition Switch in ACCY or RUN, current flows through Fuse 6 and the Liftgate/Hatchback Circuit Breaker to operate the Liftgate/Hatchback Wiper/Washer.

Washer Operation

When the Washer Switch closes, the Liftgate/Hatchback Washer Pump motor is powered. The Washer Switch does not start wiper operation.

Wiper Operation

When the Wiper Switch is turned ON, current flows through the 58 (W) wire to operate the Liftgate/Hatchback Wiper Motor.

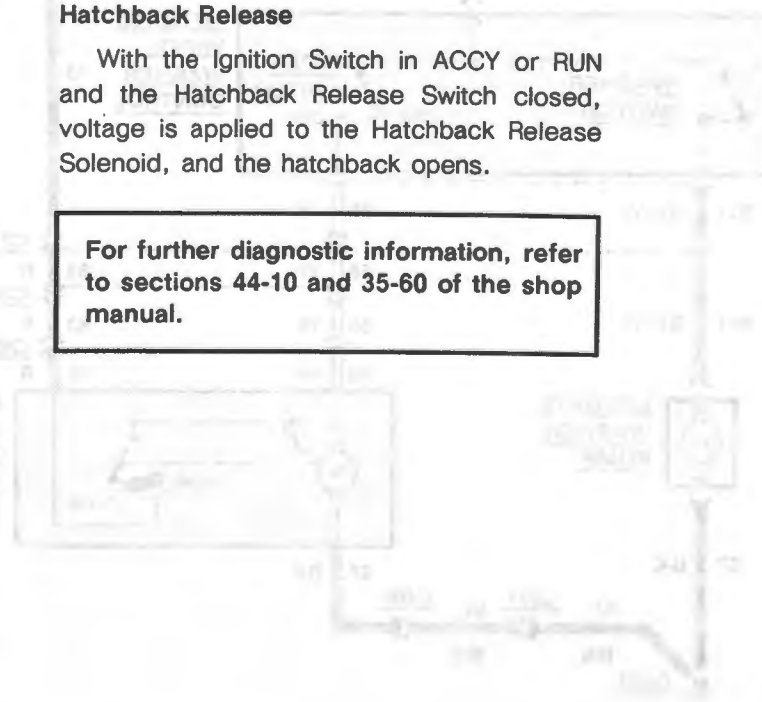
When the Wiper Switch is turned OFF, the 58 (W) wire circuit is opened. Current flows through the 63 (R) wire and the RUN contact of the Liftgate/Hatchback Wiper Switch. When the switch contacts move to the PARK position,

the cycle ends, the motor stops, and the wiper blade stays in PARK.

Hatchback Release

With the Ignition Switch in ACCY or RUN and the Hatchback Release Switch closed, voltage is applied to the Hatchback Release Solenoid, and the hatchback opens.

For further diagnostic information, refer to sections 44-10 and 35-60 of the shop manual.

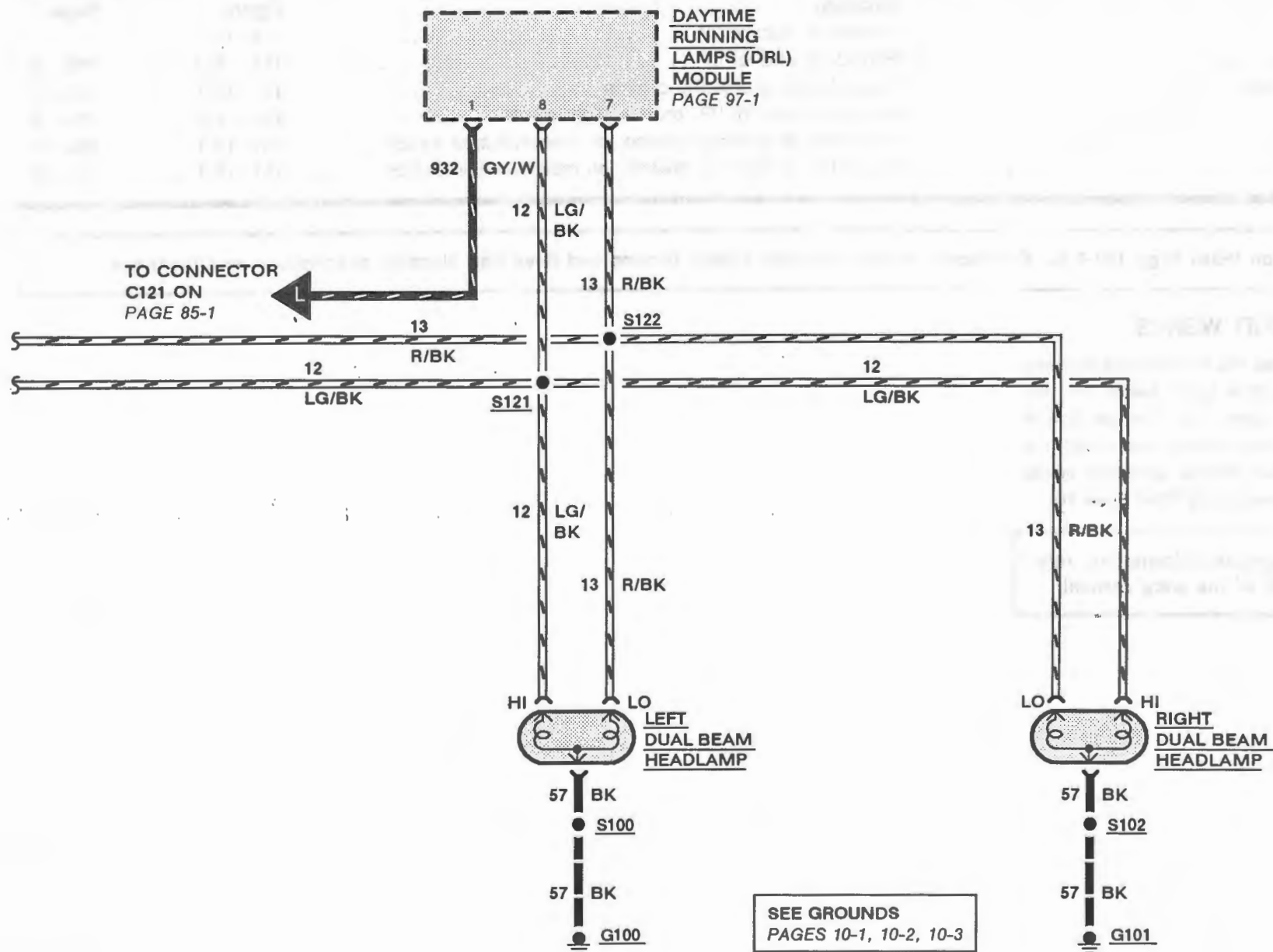


LIFTGATE/HATCHBACK WIPER/WASHER 82-4

TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
Hatchback Wiper/Washer doesn't operate	- Inoperative switch - No voltage to switch	- Check Fuse 6 by operating Hatchback Release (if available) - Check Hatchback Circuit Breaker - Remove the Wiper/Washer Control Switch connector and check for voltage at the 296 (W/P) wire. If OK, with Wiper Switch in the ON position, attach a jumper between the 296 (W/P) and 58 (W) wires. If Wiper Motor runs, replace the switch.
Hatchback Wiper Motor operates; Washer Pump doesn't operate	- Inoperative Washer Switch - Inoperative Washer Pump - Open in circuit	Remove the Wiper/Washer Control Switch connector and attach a jumper between the 296 (W/P) and 941 (BK/W) wires. If Washer Pump runs, replace the switch. If Washer Pump doesn't run, check 941 (BK/W) and 57 (BK) wires. If OK, replace Washer Pump.
Hatchback Washer Pump operates; Wiper Motor doesn't operate	- Inoperative Wiper Motor - Inoperative Wiper Switch - Open in circuit	- Remove the Wiper/Washer Control Switch connector and attach a jumper between the 296 (W/P) and 58 (W) wires. If Wiper Motor operates, replace the switch. - Check the 58 (W) and 57 (BK) wires for an open. If OK, replace Wiper Motor.
Wiper doesn't go to PARK position	Open in 63 (R) wire	Check 63 (R) wires for an open. If OK, replace Wiper Motor Switch.
Hatchback Release doesn't operate	- No voltage to Release Solenoid - Inoperative Release Solenoid - Inoperative Release Switch	- Check Fuse 6 by operating Hatchback Wiper (if available) - Remove the Wiper/Washer Control Switch connector and check for voltage at the 296 (W/P) wire - Attach a jumper at the connector between the 296 (W/P) and 84 (P/Y) wires. If Hatchback Release operates, replace switch. - With Hatchback Release Switch closed, check for voltage across the Hatchback Release Solenoid between the 84 (P/Y) and 57 (BK) wires. If OK, replace Hatchback Release Solenoid. - Check related wiring

HEADLAMPS 85-2



85-3 HEADLAMPS

Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	
Main Light Switch	Behind LH side of I/P	151- 8-3	150- 9
Multi-function Switch	Top LH side of steering column	151- 13-1	150-10
C262	Behind LH side of I/P, on main light switch	151- 8-3	150- 9
C268	Inside top of steering column, on multi-function switch	151- 13-1	150-10
C269	Inside top of steering column, on multi-function switch	151- 13-1	150-10

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

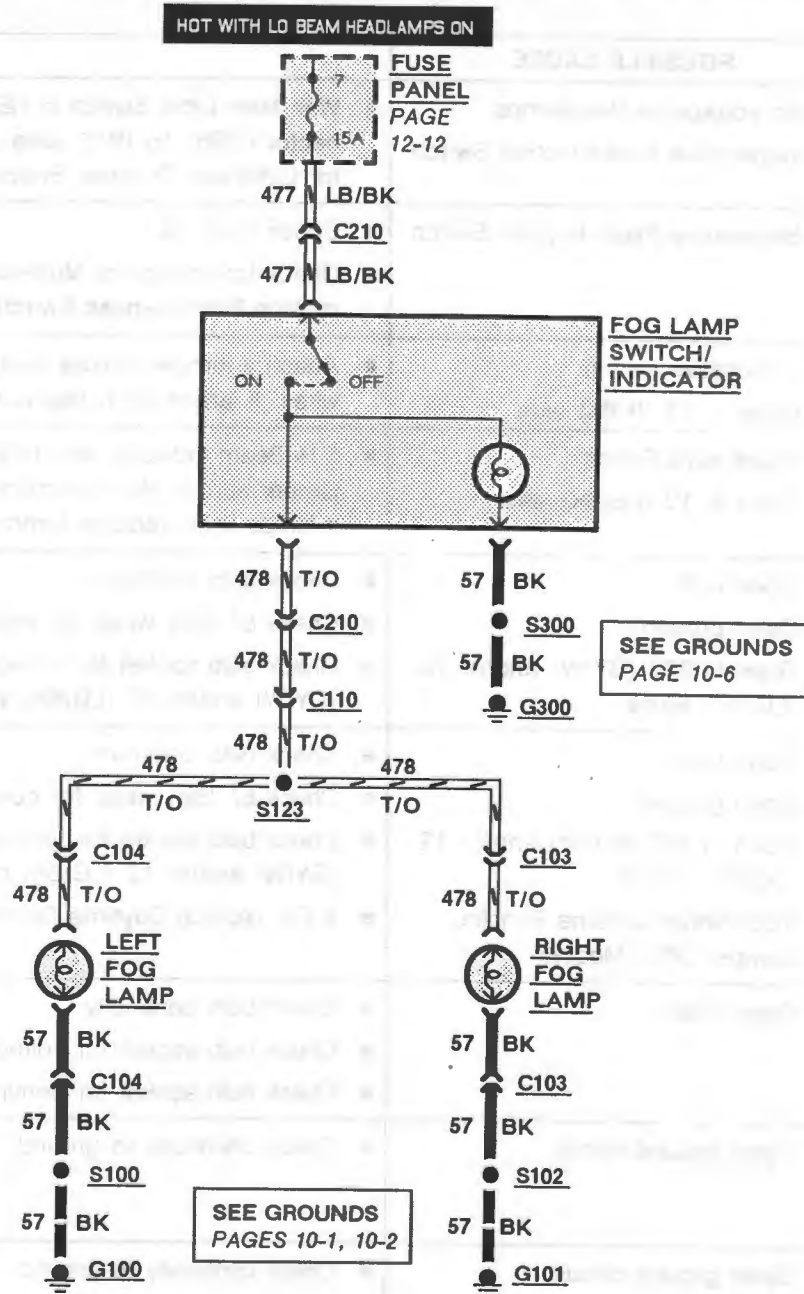
Power to operate the Headlamps normally flows through the Main Light Switch and the Dimmer Switch. When the Dimmer Switch lever is pulled partway toward the driver, the Flash-to-pass Switch closes, providing power to the Hi Beam Headlamps from Fuse 10.

For further diagnostic information, refer to section 32-02 of the shop manual.

TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
Headlamps don't work in HI or LO; passing beam OK	- No voltage to Headlamps - Inoperative Multi-function Switch	With Main Light Switch in HEAD position, check for voltage at connector C268, 15 (R/Y) wire. If OK, check 13 (R/BK) wire at connector C268 with Dimmer Switch in LO.
Headlamps OK; no passing beam	Inoperative Flash-to-pass Switch	- Check Fuse 10 - Check for voltage at Multi-function Switch, 196 (DB/O) wire. If OK, replace Flash-to-pass Switch.
Hi Beams work; no Lo Beams	- Inoperative switch - Open in 13 (R/BK) wire	Attach a jumper across Multi-function Switch 15 (R/Y) and 13 (R/BK) wires. If lamps light, replace Dimmer Switch.
Lo Beams work; no Hi Beams	- Inoperative Switch - Open in 12 (LG/BK) wire	If Hi Beam Indicator and Hi Beam Lamps don't work, attach a jumper across Multi-function Switch 15 (R/Y) and 12 (LG/BK) wires. If lamps light, replace Dimmer Switch.
Hi Beams work; no Hi Beam Indicator (without Daytime Running Lamps [DRL])	- Open bulb - Open ground - Open in 932 (GY/W) and/or 12 (LG/BK) wires	- Check bulb continuity - Check 57 (BK) wires for continuity to ground - Check bulb socket for voltage. If voltage is not present, check 932 (GY/W) and/or 12 (LG/BK) wires for open.
Hi Beams work; no Hi Beam Indicator (with Daytime Running Lamps [DRL])	- Open bulb - Open ground - Open in 932 (GY/W) and/or 12 (LG/BK) circuit - Inoperative Daytime Running Lamps (DRL) Module	- Check bulb continuity - Check 57 (BK) wires for continuity to ground - Check bulb socket for voltage. If voltage is not present, check 932 (GY/W) and/or 12 (LG/BK) circuits for open - If OK, replace Daytime Running Lamps (DRL) Module
Any one headlamp is inoperative	Open bulb	- Check bulb continuity - Check bulb socket for voltage - Check bulb socket for continuity to ground
All Right Headlamps light dimly or don't light; Left Headlamps are OK	Open ground circuit	Check continuity to ground
All Left Headlamps light dimly or don't light	Open ground circuit	Check continuity to ground

86-1 FOG LAMPS



Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

With the Lo Beam Headlamps on, voltage is applied through Fuse 7 to the Fog Lamp Switch. With the Fog Lamp Switch in the ON position, voltage is applied to the Fog Lamps and Indicator.

For further diagnostic information, refer to section 32-02 of the shop manual.

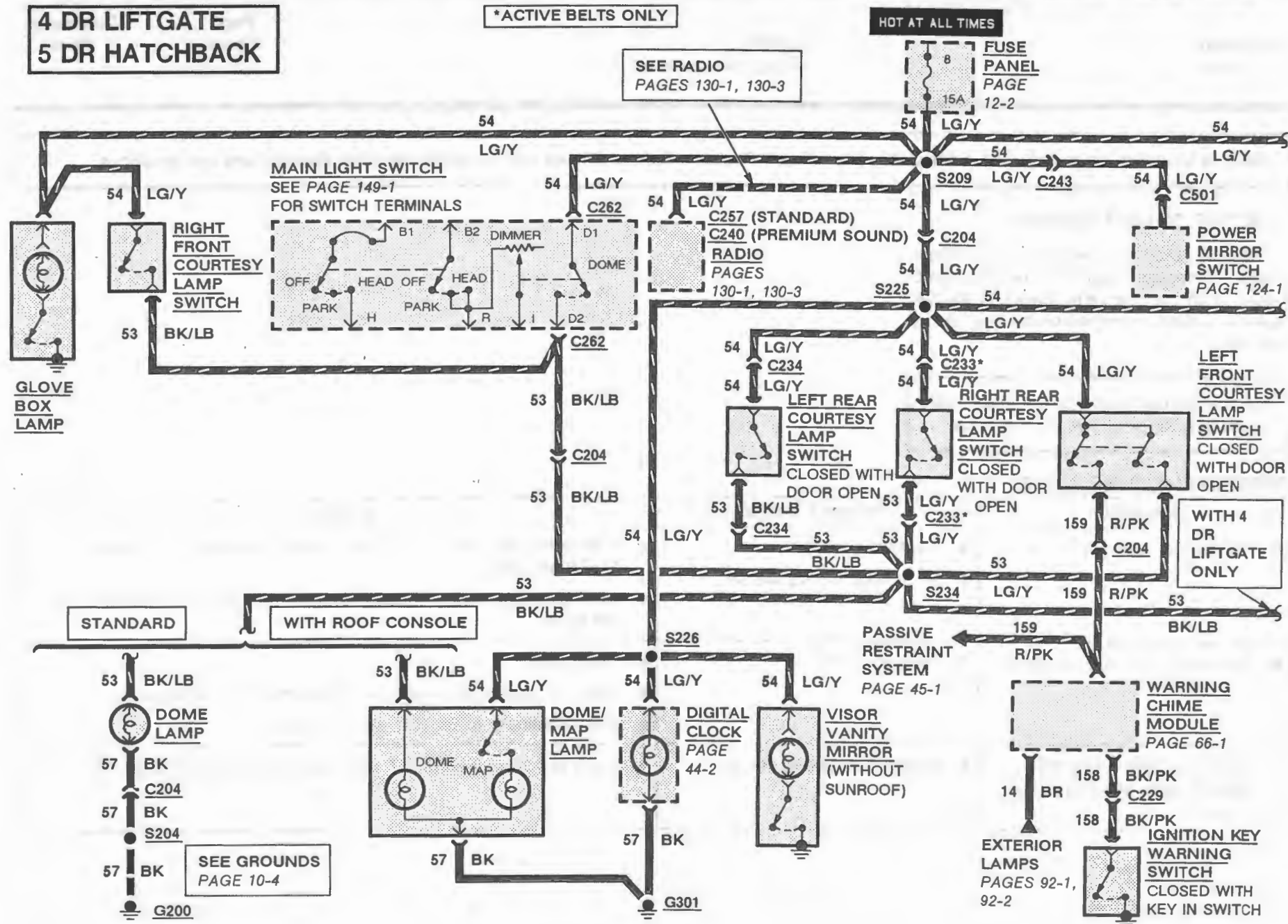
TROUBLESHOOTING HINTS

CONDITION	POSSIBLE CAUSE	ACTION
Fog Lamps don't work	- Inoperative switch - No voltage to Fog Lamps	- If indicator light is also out, check Fuse 7, connector C210 and 477(LB/BK) wire. - If indicator light works, check 478 (T/O) wire and connectors C210 and C110
Only one Fog Lamp comes on	Open in circuit	- Check bulb - Check for voltage at inoperative Fog Lamp, 478 (T/O) wire - Check continuity of BK (57) wire to ground
Fog Lamp Switch Indicator doesn't work, but Fog Lamps do work	Inoperative ground circuit	Check Fog Lamp Switch, 57 (BK) wire, for continuity to ground

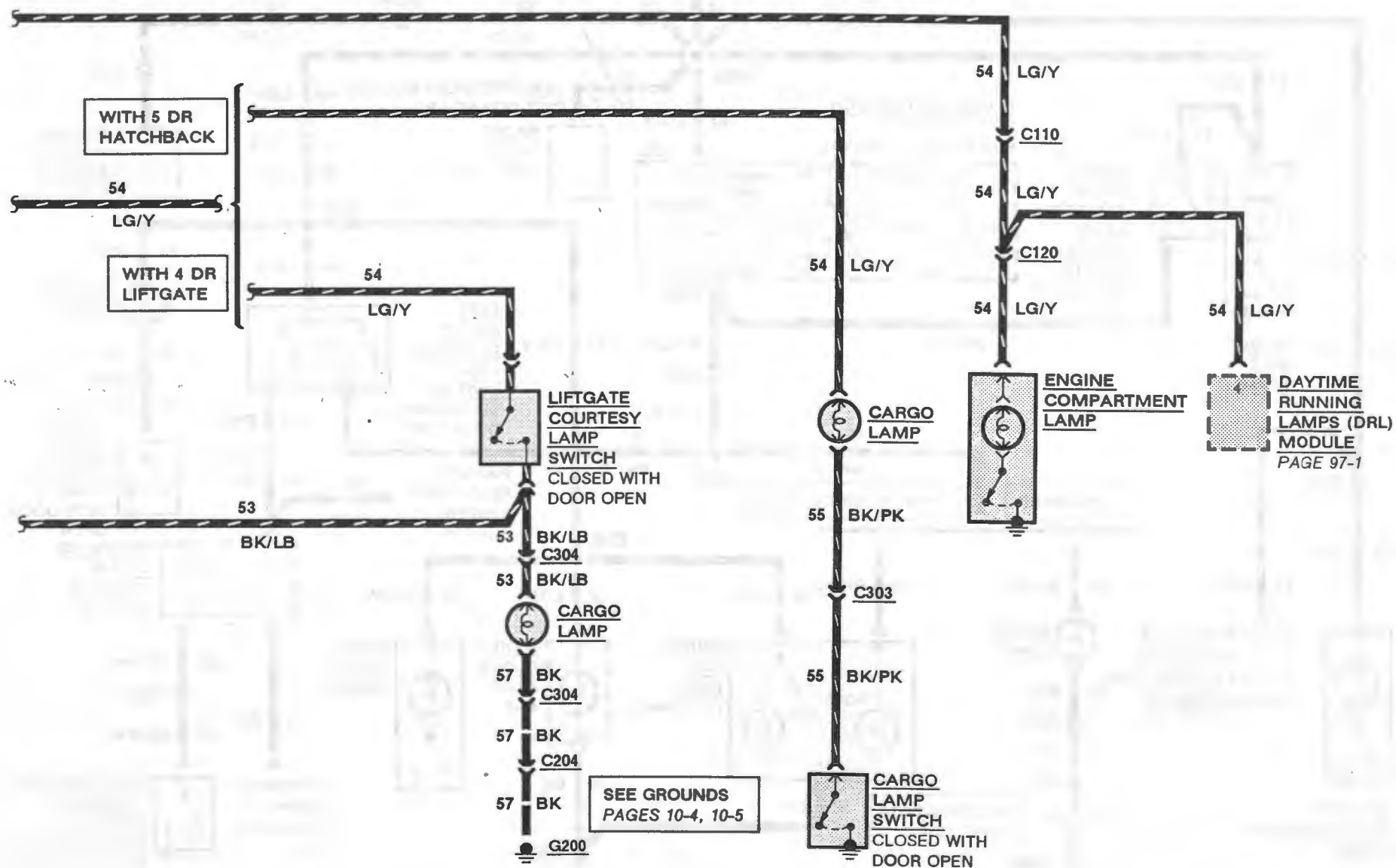
4 DR LIFTGATE
5 DR HATCHBACK

SEE RADIO
PAGES 130-1, 130-3

**FUSE
PANEL
PAGE
12-2**

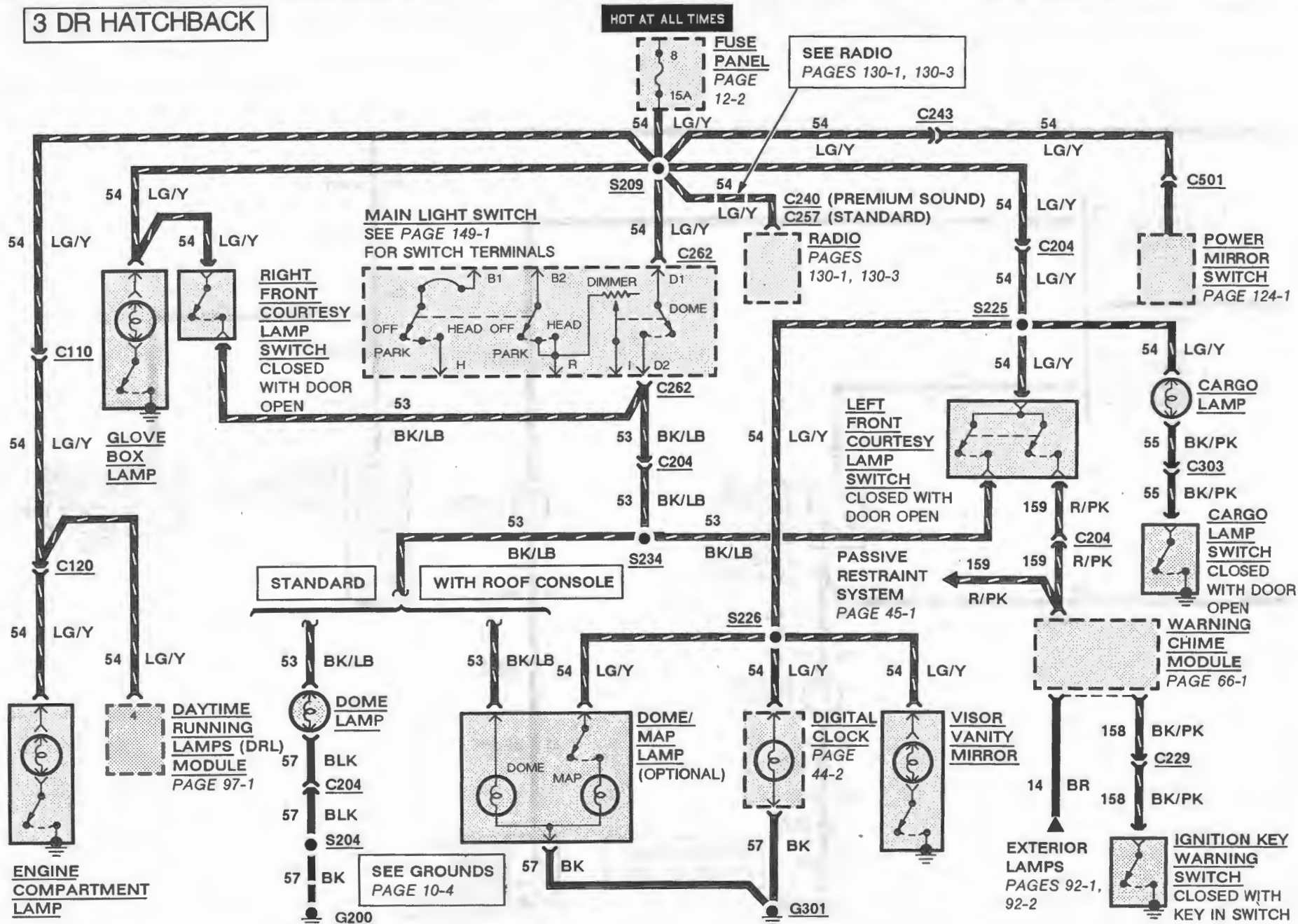


COURTESY LAMPS/KEY WARNING/LAMPS ON REMINDER 89-2



89-3 COURTESY LAMPS/KEY WARNING/LAMPS ON REMINDER

3 DR HATCHBACK



COURTESY LAMPS/KEY WARNING/LAMPS ON REMINDER 89-4

Component	Location	Page Figure	Connector Page
Cargo Lamp Switch	LH rear of hatchback	151- 21-2	
Daytime Running Lamps (DRL) Module	Lower RH front of engine compartment	151- 5-1	150- 2
Fuse Panel	Behind LH side of I/P	151- 11-1	
Ignition Key Warning Switch	Top RH side of steering column, part of ignition switch	151- 13-1	
Main Light Switch	Behind LH side of I/P	151- 8-3	150- 9
Warning Chime Module	Behind RH side of I/P, LH side of glove box	151- 12-1	150-16
C240	Behind center of I/P, on radio	151- 14-2	150-13
C257 (without Premium Sound)	Behind center of I/P, on radio	151- 14-2	150-12
C262	Behind LH side of I/P, on main light switch	151- 8-3	150- 9

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

Voltage is applied at all times through Fuse 8 to the Dimmer Switch, Door Switches and other switches for individual lamps.

If the Dimmer Switch knob is turned fully ON, or if a Door Switch is closed, current flows through the Dome Lamp.

For further diagnostic information, refer to section 32-60 of the shop manual.

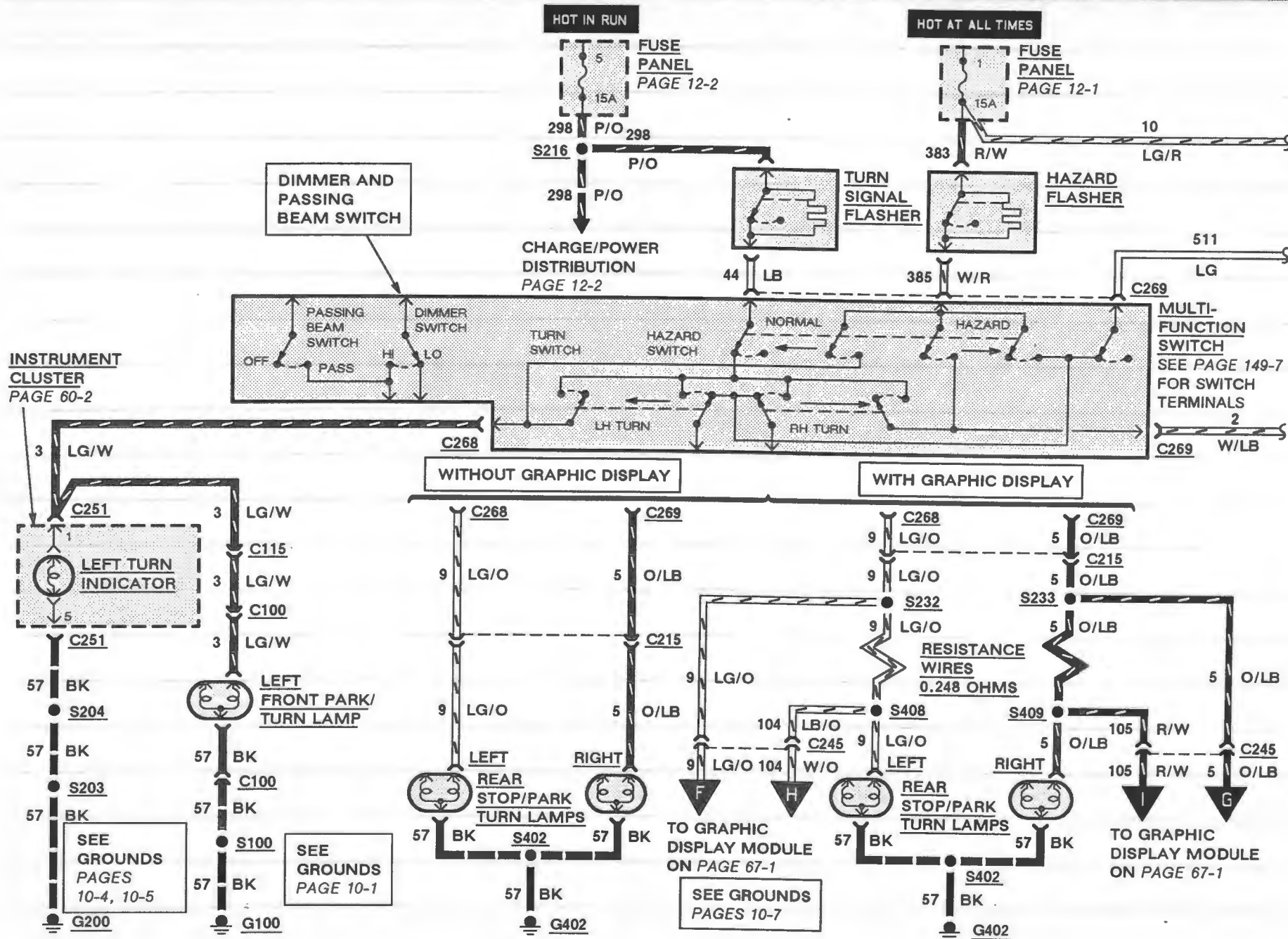
89-5 COURTESY LAMPS/KEY WARNING/LAMPS ON REMINDER

TROUBLESHOOTING HINTS

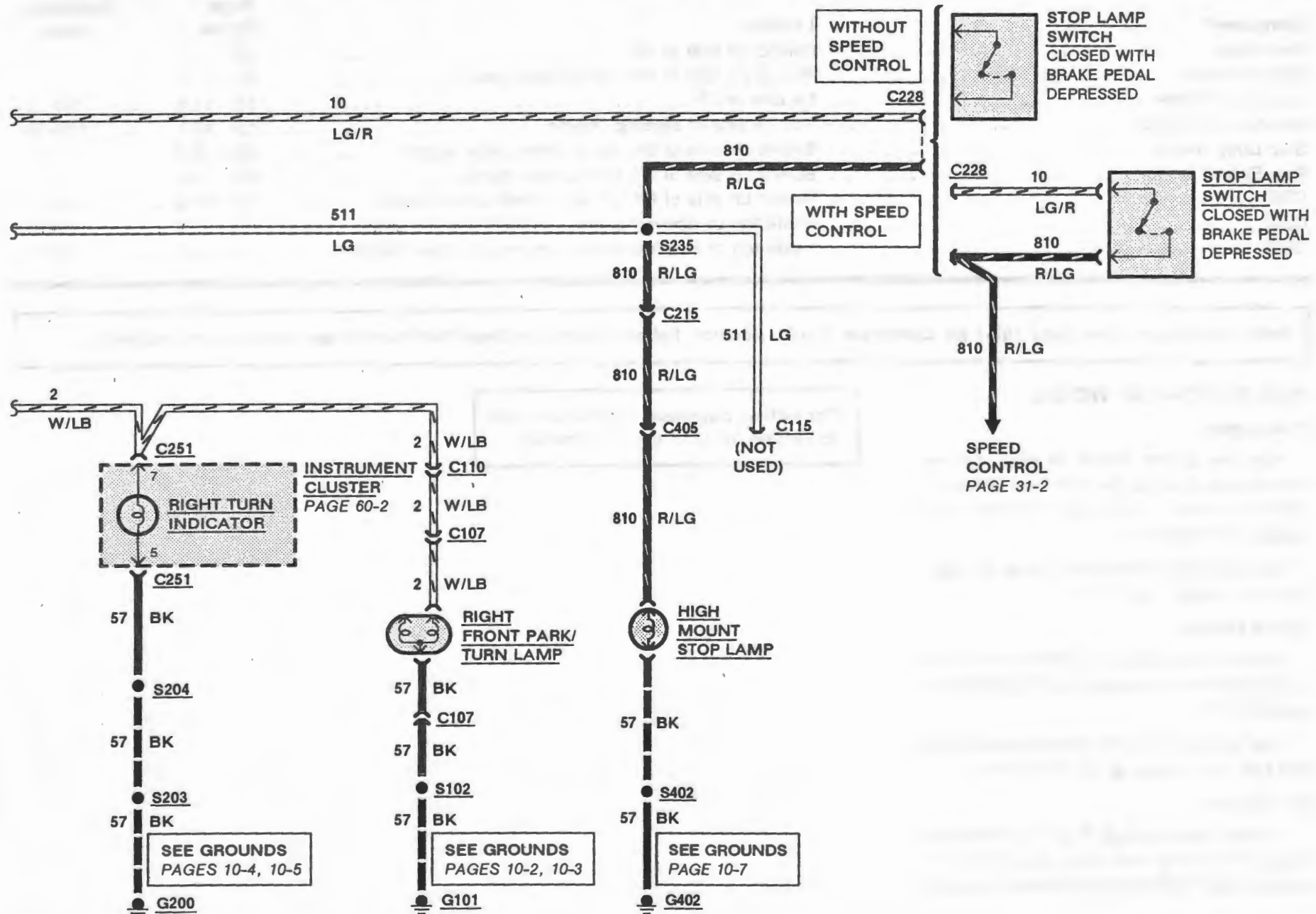
CONDITION	POSSIBLE CAUSE	ACTION
Any one lamp doesn't light	- Open bulb - Open ground circuit	- Check bulb socket for voltage - Check bulb continuity - Check bulb socket contact for continuity to ground
Lamps with common power supply don't light	No voltage to common point	- Check fuse supplying common point - Check switch supplying common circuit - Check wiring to common point
Lamps with a common ground don't light	High resistance in ground circuit	Check continuity between common point and ground



90-1 TURN/STOP/HAZARD LAMPS



TURN/STOP/HAZARD LAMPS 90-2



90-3 TURN/STOP/HAZARD LAMPS

Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	
Hazard Flasher	Behind LH side of I/P, rear of fuse panel	151- 11-2	
Instrument Cluster	LH side of I/P	151- 11-6	 150- 8
Multi-function Switch	Top LH side of steering column	151- 13-1	 150-10
Stop Lamp Switch	Behind LH side of I/P, top of brake pedal support	151- 9-2	
Turn Signal Flasher	Behind LH side of I/P, front of fuse panel	151- 11-1	
C251	Behind LH side of I/P, on rear of instrument cluster	151- 11-6	 150- 8
C268	Inside top of steering column, on multi-function switch	151- 13-1	 150-10
C269	Inside top of steering column, on multi-function switch	151- 13-1	 150-10

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

Turn Signals

With the Ignition Switch in RUN, current flows through Fuse 5, the Turn Signal Flasher, the Multi-function Switch, and on to the Turn Lamps and Indicators.

The Turn Switch sends the power to either the Left or Right Turn Lamps.

Hazard Flasher

Current flows through Fuse 1 to the Turn Lamps and Indicators when the Hazard Switch is pulled out.

The Turn Switch sends current to the Right and Left Turn Lamps at the same time.

Stop Lamps

Current flows through Fuse 1 to the High Mount Stop Lamp and Rear Stop/Park/Turn Lamps when the Stop Lamp Switch is closed.

For further diagnostic information, refer to section 32-40 of the shop manual.

TURN/STOP/HAZARD LAMPS 90-4

TROUBLESHOOTING HINTS

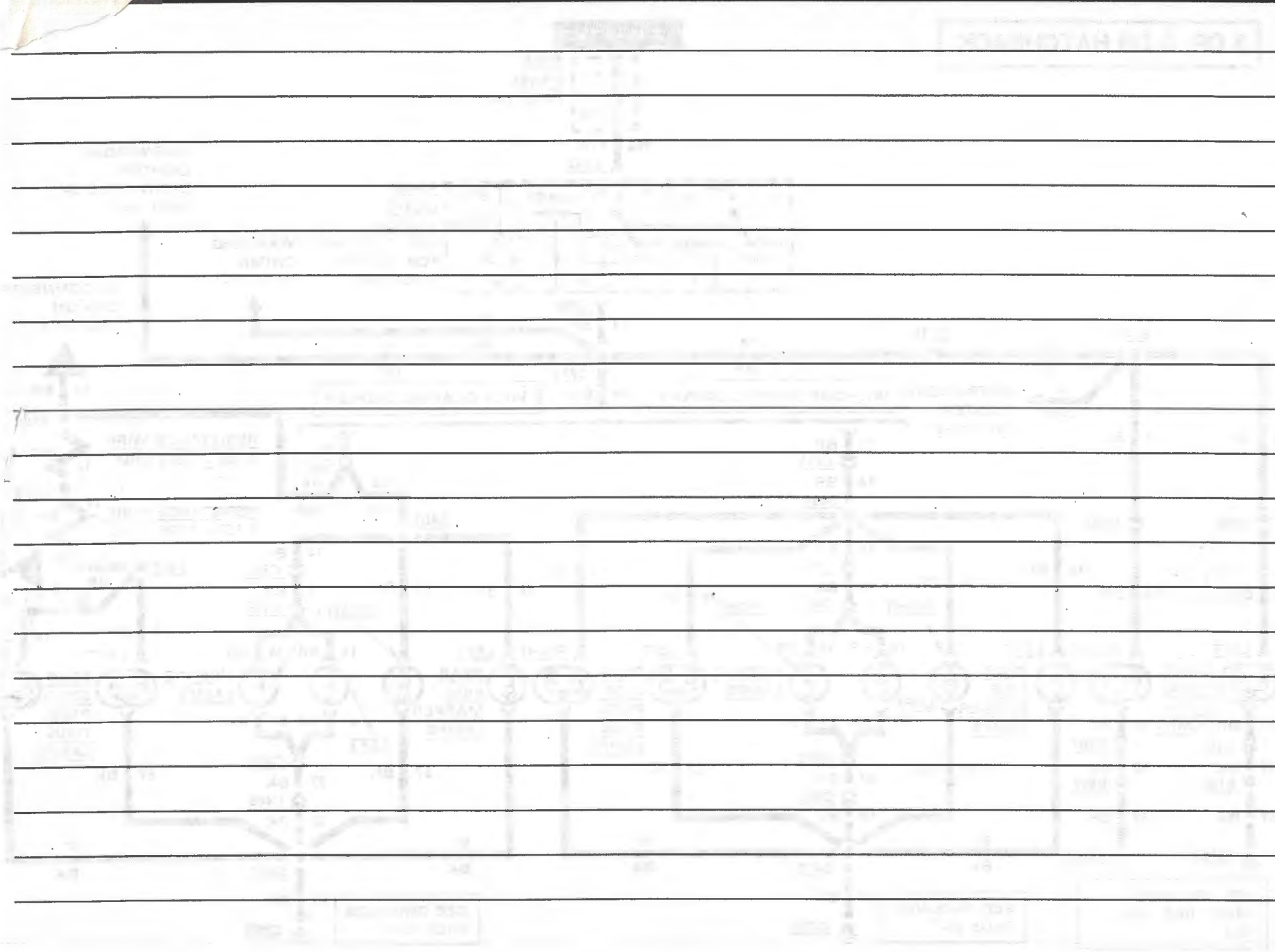
CONDITION	POSSIBLE CAUSE	ACTION
Hazard lamps don't work; turn lamps do work	No voltage at Multi-function Switch	- Check Hazard Flasher - Check Multi-function Switch
No turn lamps work; hazard lamps do work	No voltage at Multi-function Switch	- Check Turn Signal Flasher - Check Multi-function Switch
No rear stop lamps work; high beam stop lamp works (4 DR GATE ONLY)	No voltage at Multi-function Switch	Check Multi-function Switch
Rear turn lamps on one side don't work; hazard and/or stop lamps do work	Inoperative Multi-function Switch	Replace Multi-function Switch
Front turn lamp and turn indicator on one side don't work	No voltage from Multi-function Switch	Check Multi-function Switch
Turn lamps stay on (don't flash) for both left and right turn	Inoperative Turn Signal Flasher	Replace the Turn Signal Flasher
Hazard lamps stay on (don't flash) in HAZARD, but the stop lamps go off normally	Inoperative Hazard Flasher	Replace the Hazard Flasher
Some turn lamps work and all hazard lamps work; some hazard lamps work and all turn lamps work; hazard lamps don't turn off	Inoperative switch or wire in Multi-function Switch	Replace Multi-function Switch
One of the turn indicators goes on when the park lamps are on	Inoperative turn lamp or ground	Check the front turn lamp on that side

(continued)

90-5 TURN/STOP/HAZARD LAMPS

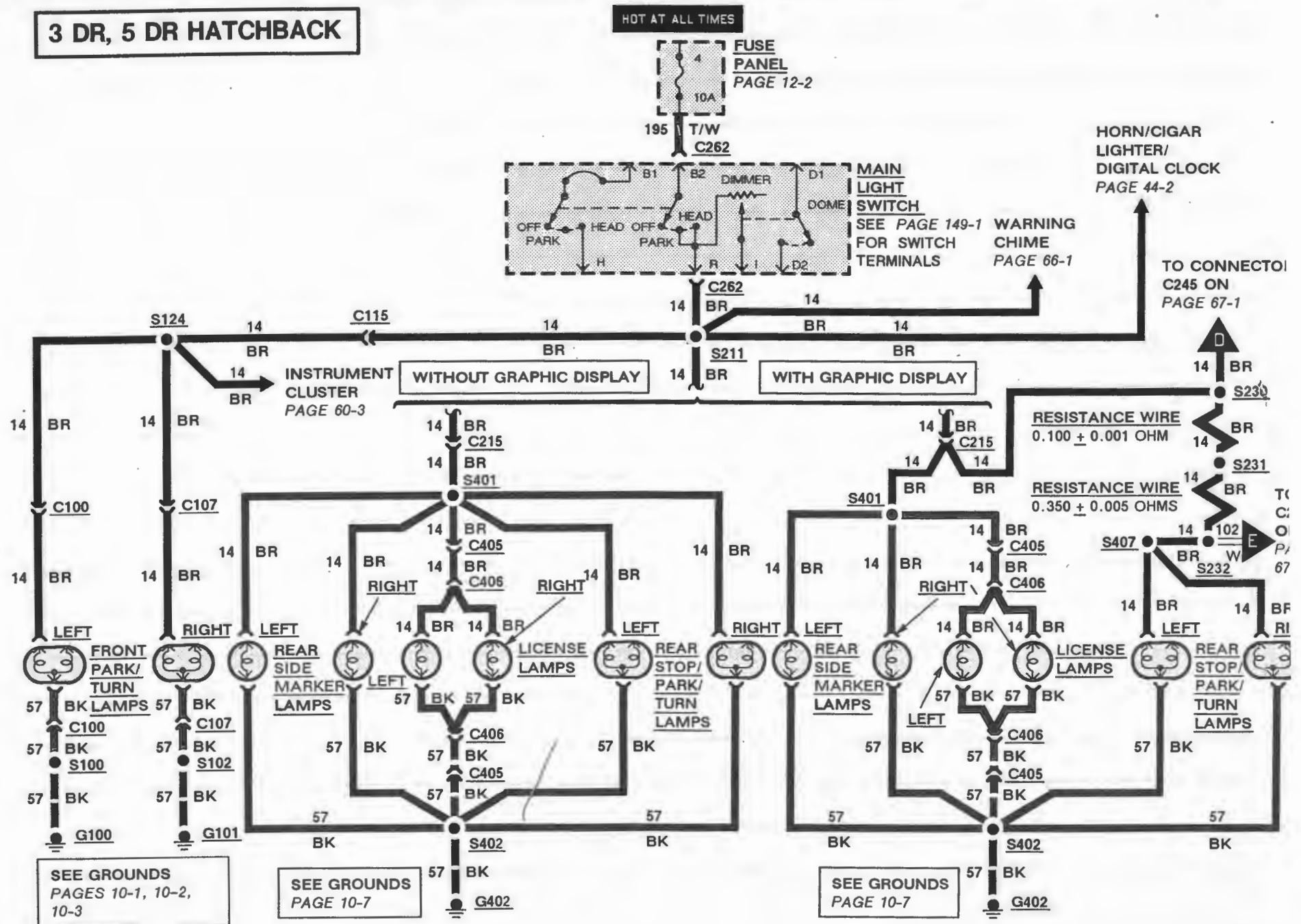
TROUBLESHOOTING HINTS (continued)

CONDITION	POSSIBLE CAUSE	ACTION
• All stop lamps stay on without the brake pedal depressed	• Inoperative Stop Lamp Switch	• Check Stop Lamp Switch • Check Vacuum Dump Valve for adjustment • Check brake pedal pivot for binding condition. Brake pedal move freely when not connected to booster.
• None of the stop lamps work; hazard flashers do not work, but turn signals do work	• Burned out Fuse 1	• Replace fuse
• None of the stop lamps work, but hazard and turn signals work	• Inoperative Stop Lamp Switch • Broken wire to Stop Lamp Switch connector	• Replace Stop Lamp Switch • Repair broken wire



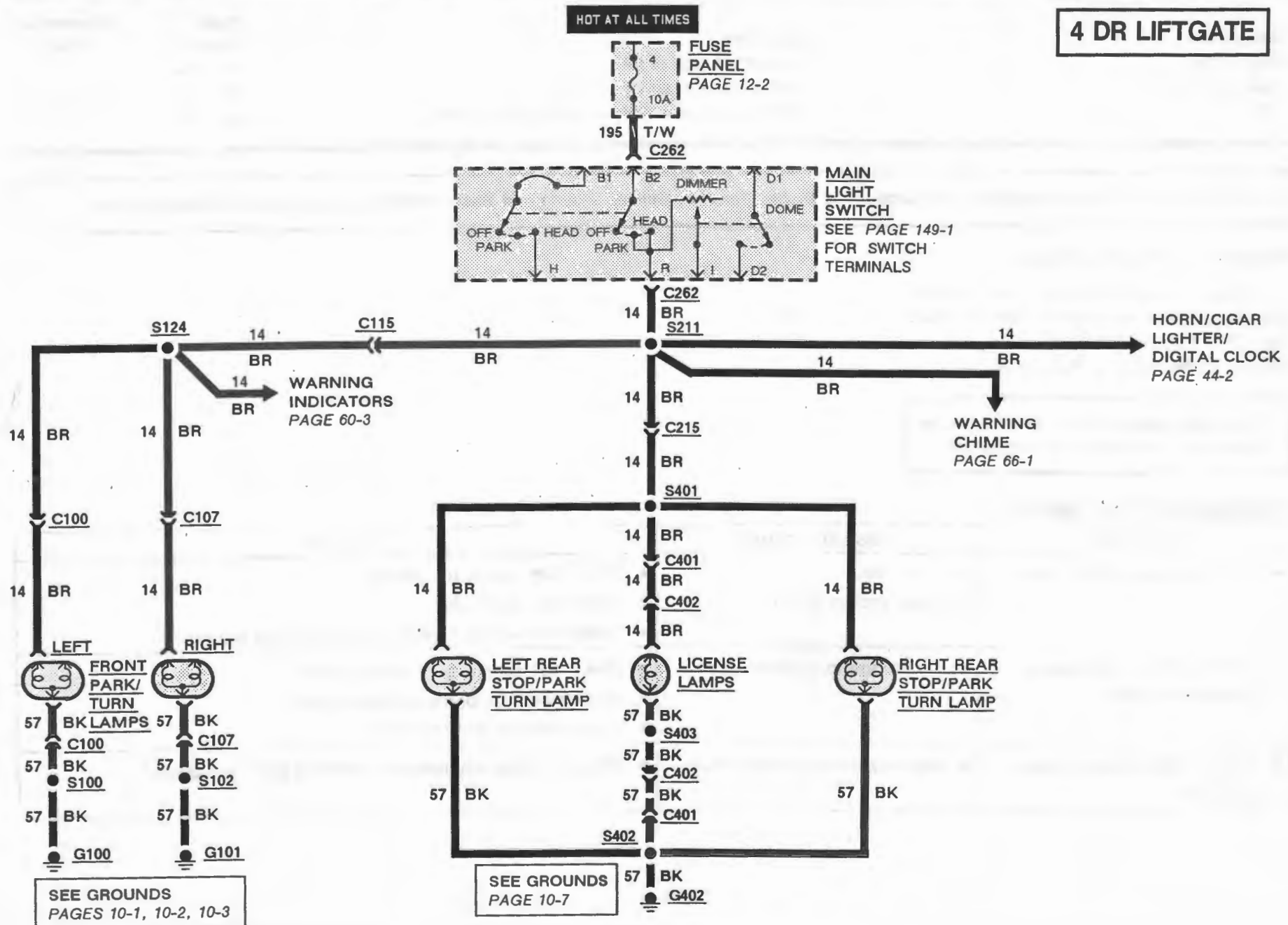
92-1 EXTERIOR LAMPS (PARK, LICENSE)

3 DR, 5 DR HATCHBACK



EXTERIOR LAMPS 92-2

4 DR LIFTGATE



92-3 EXTERIOR LAMPS

Component	Location	Page Figure	Connector Page
Fuse Panel	Behind LH side of I/P	151- 11-1	
Main Light Switch	Behind LH side of I/P	151- 8-3	150- 9
C262	Behind LH side of I/P, on main light switch	151- 8-3	150- 9

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

Voltage is applied through Fuse 4 to the Main Light Switch at all times. With the Main Light Switch in HEAD or PARK, voltage is applied to all the lamps in this circuit.

For further diagnostic information, refer to section 32-01 of the shop manual.

TROUBLESHOOTING HINTS

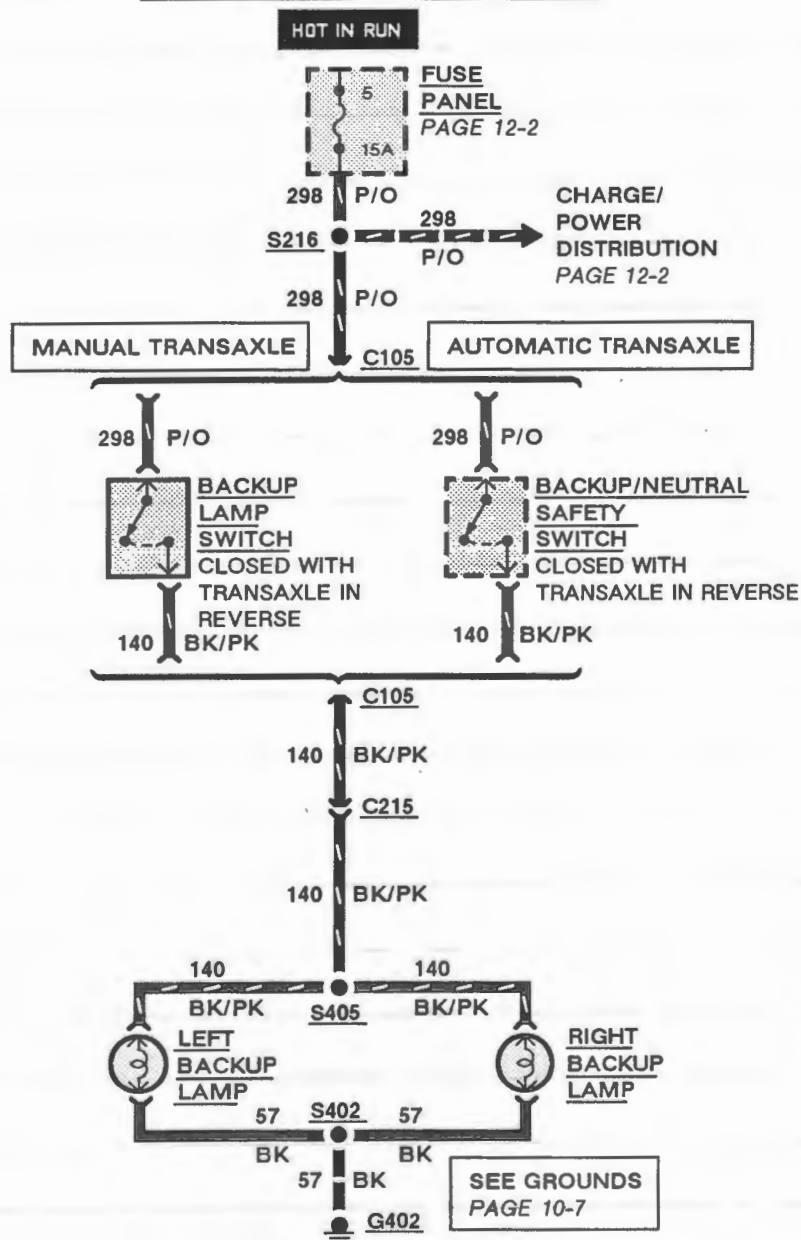
CONDITION	POSSIBLE CAUSE	ACTION
Any one lamp doesn't light	- Open bulb - Open ground circuit	- Check bulb socket for voltage - Check bulb continuity - Check bulb socket contact for continuity to ground
Lamps with common power supply don't light	No voltage to common point	- Check fuse supplying common circuit - Check switch supplying common circuit - Check wiring to common point
Lamps with common ground don't light	High resistance ground circuit	Check for continuity between common point and ground

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

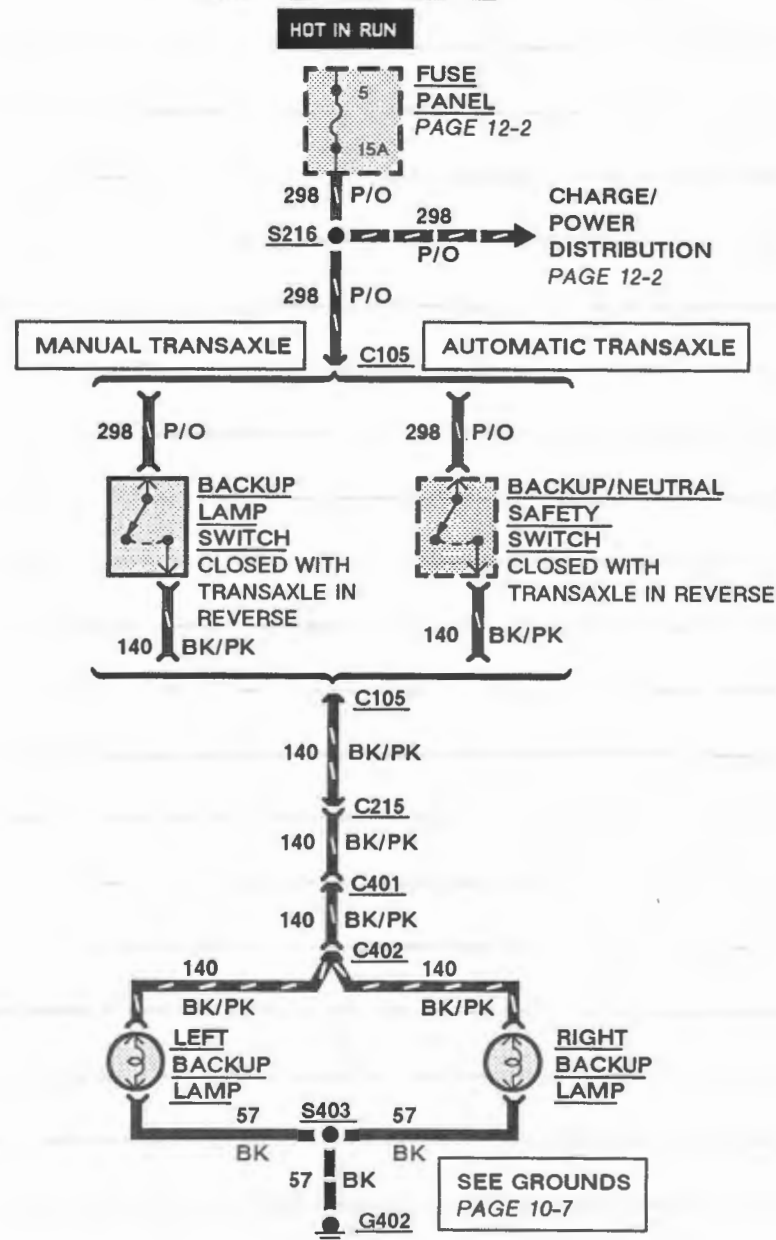
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

93-1 BACKUP LAMPS

3 DR, 5DR HATCHBACK



4 DR LIFTGATE



BACKUP LAMPS 93-2

| Component | Location | Page
Figure | Connector
Page |
|------------------------------------|---|----------------|-------------------|
| Backup Lamp Switch | Lower LH front of manual transaxle assembly | 151- 2-1 | |
| Backup/Neutral Safety Switch | RH side of automatic transaxle assembly | 151- 2-3 | |
| Fuse Panel | Behind LH side of I/P | 151- 11-1 | |

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

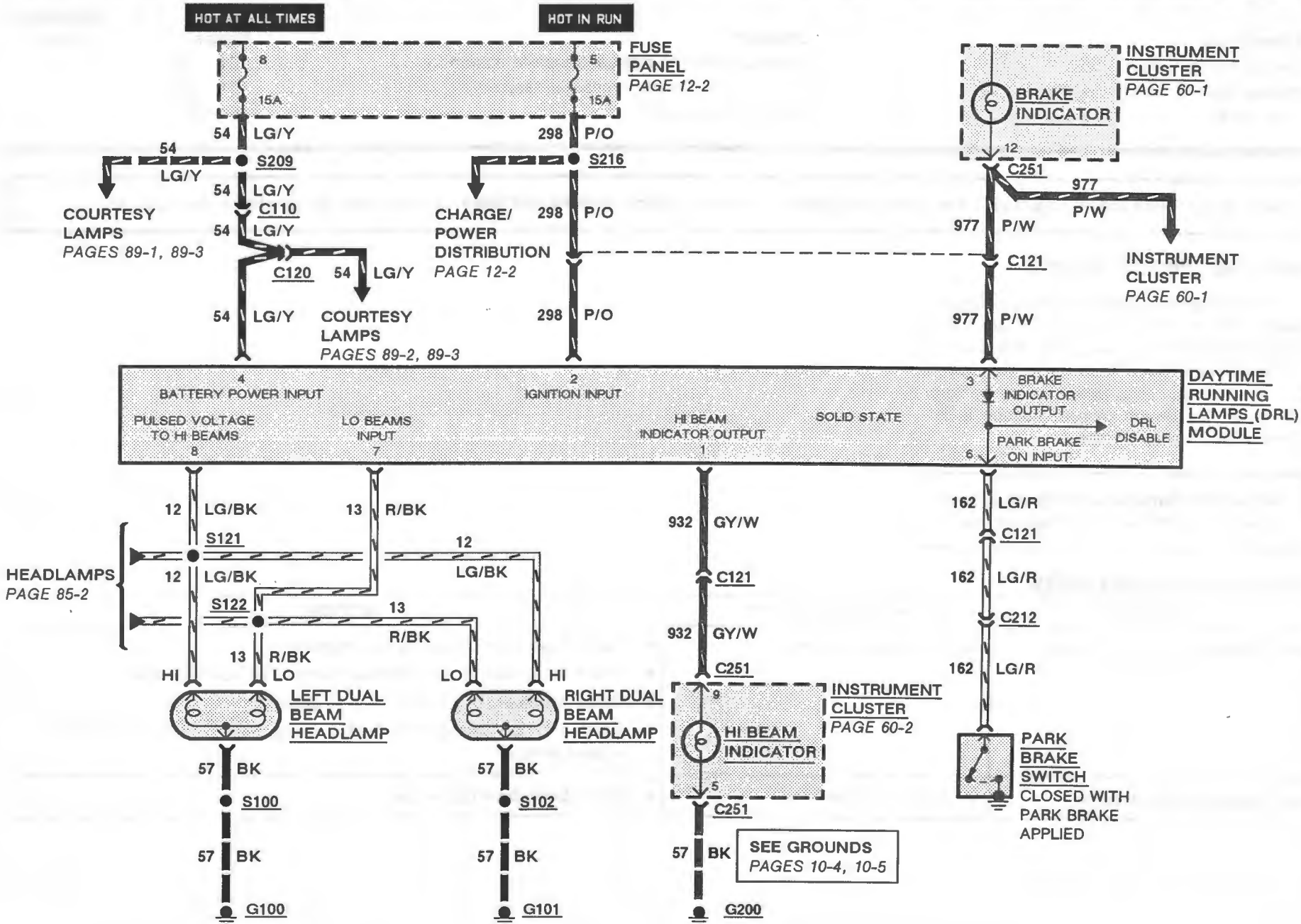
With the Ignition Switch in RUN, voltage is applied from Fuse 5 to the Backup Lamp Switch (Manual Transaxle) or to the Backup/Neutral Safety Switch (Automatic Transaxle). With the Backup Lamp Switch or the Backup/Neutral Safety Switch closed, voltage is applied to the Backup Lamps.

For further diagnostic information, refer to section 32-01 of the shop manual.

TROUBLESHOOTING HINTS

| CONDITION | POSSIBLE CAUSE | ACTION |
|---|---|--|
| <ul style="list-style-type: none"> Backup Lamps don't work | <ul style="list-style-type: none"> No voltage to lamps | <ul style="list-style-type: none"> Check Fuse 5 by operating turn signals Check for voltage at the Backup Lamp, 140 (BK/PK) wire Check continuity of 57 (BK) wire to ground Attach a jumper across the Backup Lamp Switch. If lamp operates, replace switch. |
| <ul style="list-style-type: none"> Backup Lamps stay on | <ul style="list-style-type: none"> Short in circuit | <ul style="list-style-type: none"> Check Backup Lamp Switch |

97-1 DAYTIME RUNNING LAMPS (CANADIAN VEHICLES ONLY)



DAYTIME RUNNING LAMPS (CANADIAN VEHICLES ONLY) 97-2

| Component | Location | Page Figure | Connector Page |
|--|--|-----------------|----------------|
| Daytime Running Lamps (DRL) Module | Lower RH front of engine compartment | 151- 5-1 | 150- 2 |
| Fuse Panel | Behind LH side of I/P | 151- 11-1 | |
| Ignition Switch | Top RH side of steering column | 151- 13-1 | 150- 9 |
| Instrument Cluster | LH side of I/P | 151- 11-6 | 150- 8 |
| Park Brake Switch | Below rear of console, on park brake assembly | 151- 16-1 | |
| C251 | Behind LH side of I/P, on rear of instrument cluster | 151- 11-6 | 150- 8 |

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

The Daytime Running Lamps (DRL) System operates the vehicle's High Beam Headlamps at reduced power during the daytime to make the vehicle more visible to other drivers.

With the Ignition Switch in RUN, the park brake released, and the Headlamps turned OFF, the DRL Module outputs a pulsing voltage at pin 8 to operate the High Beam Headlamps at reduced intensity. When the DRL System is operating, the High Beam Indicator is not illuminated.

Applying the park brake or turning on the Headlamps disables the DRL System. Applying the park brake grounds pin 6 of the DRL Module. Turning on the Headlamps in the low beam position applies battery voltage to pin 7 of the module (and removes the ground input that the DRL Module senses through the Low Beam Headlamps). Turning on the Headlamps in the high beam position applies 12 volts to pin 8 of the DRL Module.

The diode shown inside the DRL Module prevents low brake fluid level from disabling the DRL System.

The DRL System is used only on vehicles sold in Canada.

NOTE:

The headlamps may flicker during engine start-up and shut-down on DRL equipped vehicles if the A/C-Heater Blower Motor is turned ON. This is a normal condition.

Also, during Low Beam Headlamp operation on a DRL equipped vehicle, the High Beam Indicator will not illuminate when using the flash-to-pass feature.

For further diagnostic information, refer to the shop manual.

97-3 DAYTIME RUNNING LAMPS (CANADIAN VEHICLES ONLY)

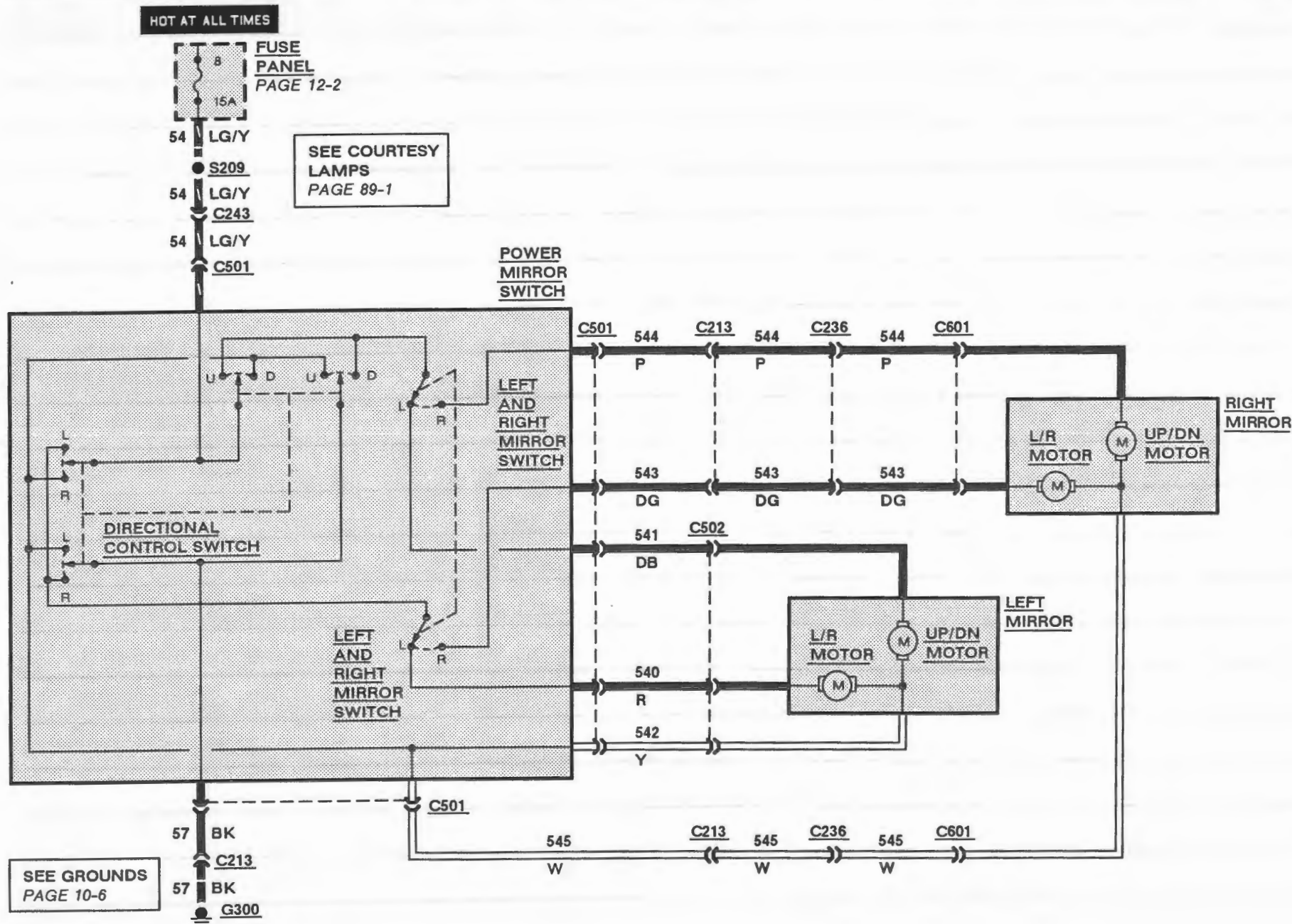
TROUBLESHOOTING HINTS

| CONDITION | POSSIBLE CAUSE | ACTION |
|---|--|--|
| <ul style="list-style-type: none">Daytime Running Lamps don't operate | <ul style="list-style-type: none">Blown fuseOpen ground connection162 (LG/R) wire shorted to groundInoperative Daytime Running Lamps Module | <ul style="list-style-type: none">Check fusesCheck ground connectionsWith Park Brake disengaged, check for a short between the 162 (LG/R) wire at connector C212Check for voltage at the 54 (LG/Y) and 298 (P/O) wires at connectors C120 and C121Check for voltage at the 12 (LG/BK) wire with the Ignition Switch in RUN, Park Brake disengaged and Headlamps off. If no voltage is present, replace module. |
| <ul style="list-style-type: none">Daytime Running Lamps won't turn off with Main Light Switch in HEAD | <ul style="list-style-type: none">Open in 13 (R/BK) park wireInoperative Daytime Running Lamps Module | <ul style="list-style-type: none">With Main Light Switch in HEAD and Dimmer Switch in LO, check for voltage on the 13 (R/BK) wire of connector C115. If voltage is present, replace module. |
| <ul style="list-style-type: none">Hi Beam Headlamp on one side doesn't operate | <ul style="list-style-type: none">Open ground connectionBlown Headlamp | <ul style="list-style-type: none">Check ground connectionCheck continuity to Headlamp |

[Redacted]

[Faint, illegible text and markings, possibly a diagram or schematic, visible through the paper.]

124-1 POWER MIRRORS



POWER MIRRORS 124-2

| Component | Location | Page
Figure | Connector
Page |
|------------------|-----------------------------|----------------|-------------------|
| Fuse Panel | Behind LH side of I/P | 151- 11-1 | |

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

Each Power Mirror is equipped with two motors operated by a single joystick control switch. The joystick control switch directs current to the motors. By reversing current flow, each motor operates in two directions, creating both left and right (horizontal) and up and down (vertical) movement.

The Left And Right Mirror Switch connects the joystick control to either the Left or Right Power Mirror.

For further diagnostic information, refer to section 42-25 of the shop manual.

124-3 POWER MIRRORS

TROUBLESHOOTING HINTS

| CONDITION | POSSIBLE CAUSE | ACTION |
|--|---|---|
| <ul style="list-style-type: none">Power Mirrors are completely inoperative | <ul style="list-style-type: none">No voltage at Power Mirror Switch | <ul style="list-style-type: none">Check for voltage at connector C501, 54 (LG/Y) wireCheck continuity to ground G300 |
| <ul style="list-style-type: none">Left Mirror operates properly; Right Mirror is inoperative | <ul style="list-style-type: none">No voltage to Right Mirror | <ul style="list-style-type: none">With the selector in RIGHT position, connect a test lamp between 544 (P) wire and 545 (W) wire at connector C501. Move knob to UP position. If lamp lights, retest at connector C601. If lamp doesn't light, replace Power Mirror Switch.If lamp lights at connector C601, replace motor assembly. If lamp doesn't light at connector C601, repair wiring to connector C601. |
| <ul style="list-style-type: none">Right Mirror operates properly; Left Mirror is inoperative | <ul style="list-style-type: none">No voltage at Left Mirror | <ul style="list-style-type: none">With selector in LEFT position, connect a test lamp between 541 (DB) wire and 542 (Y) wire at connector C501. Move knob to UP position. If lamp lights, retest at connector C502. If lamp doesn't light, replace Power Mirror Switch.If lamp lights at connector C502, replace motor assembly. If lamp does not light at connector C502, repair wiring to connector C502. |

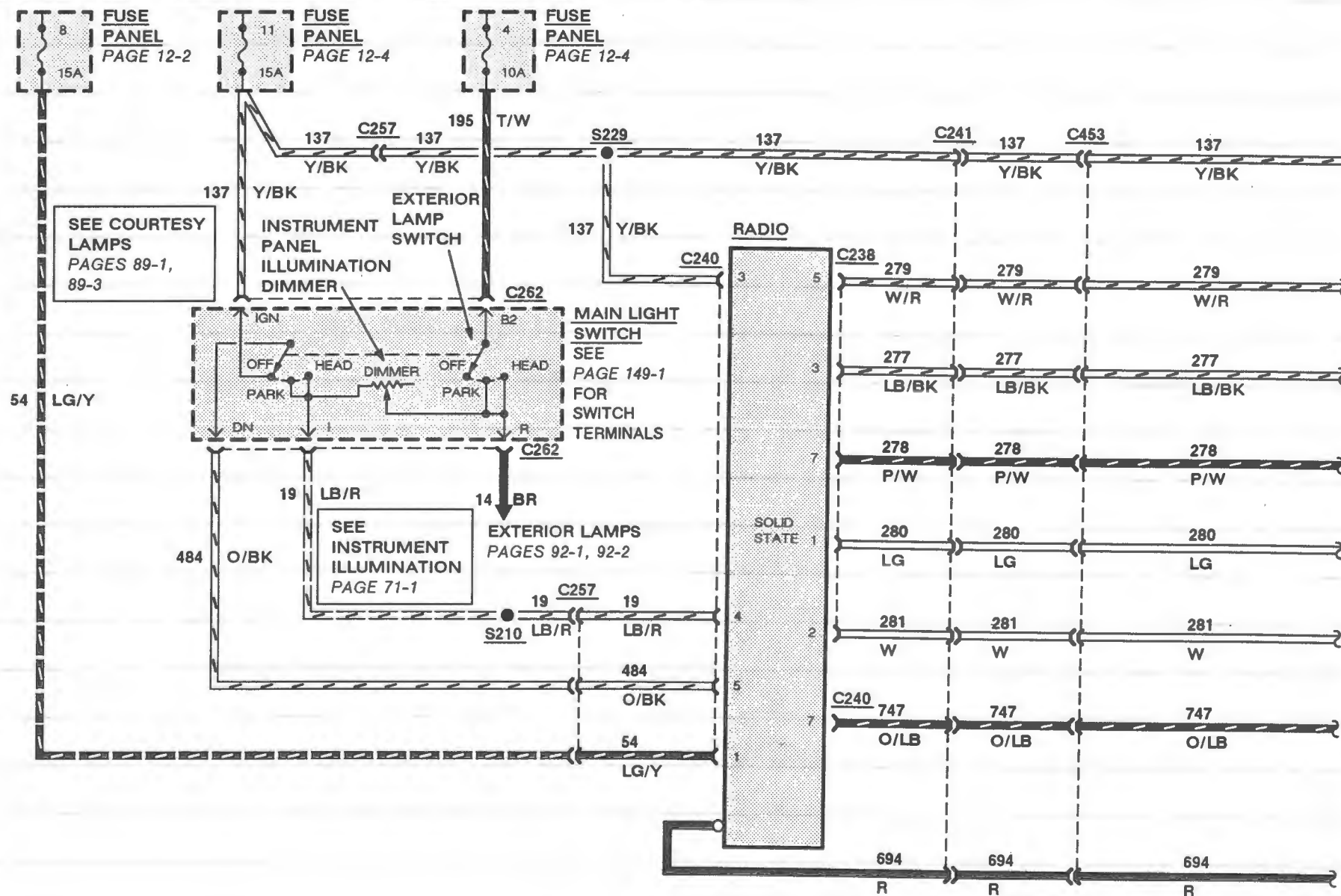
Blank lined paper with horizontal ruling lines.

130-1 RADIO (PREMIUM SOUND)

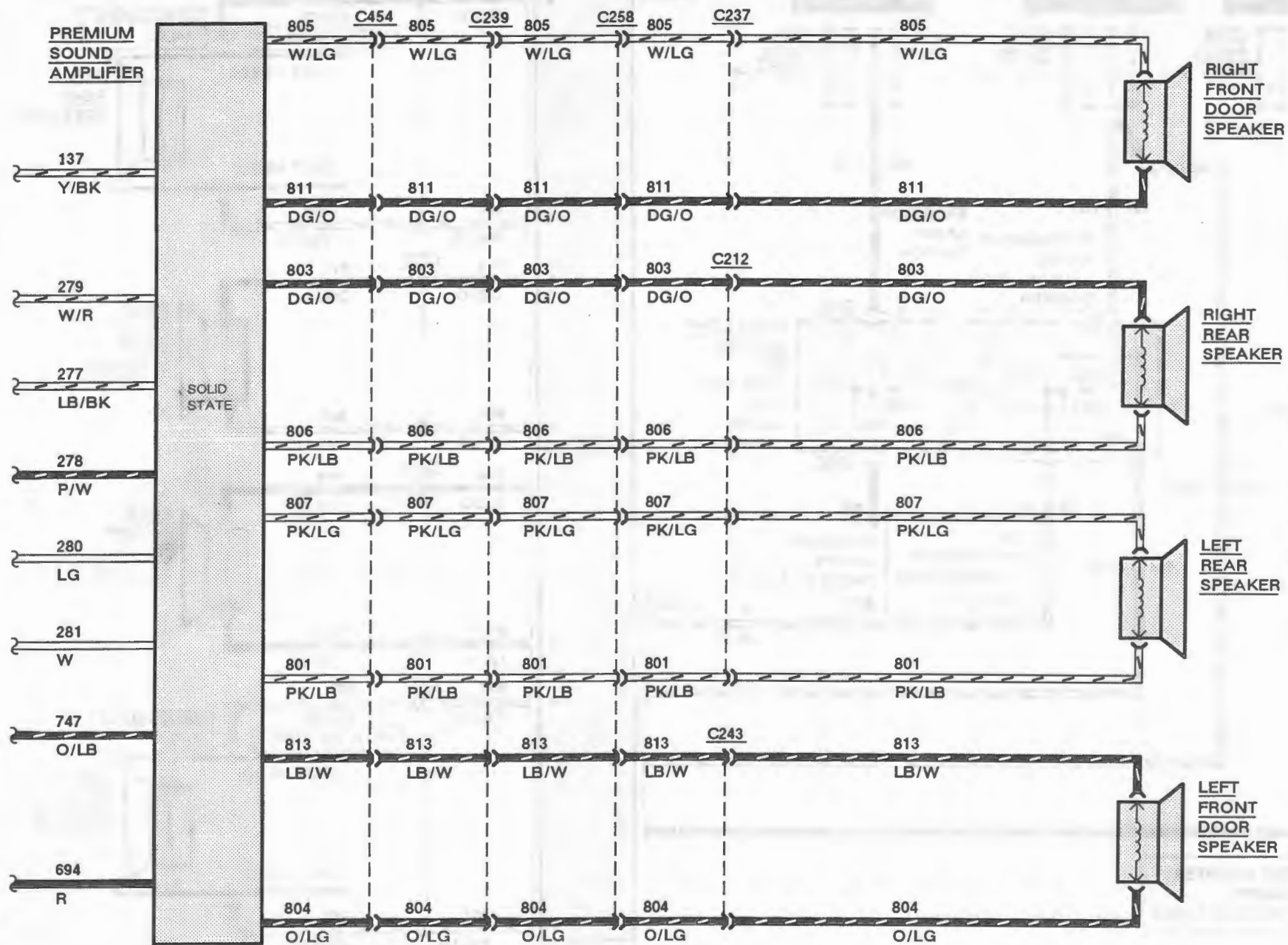
HOT AT ALL TIMES

HOT IN ACCY OR RUN

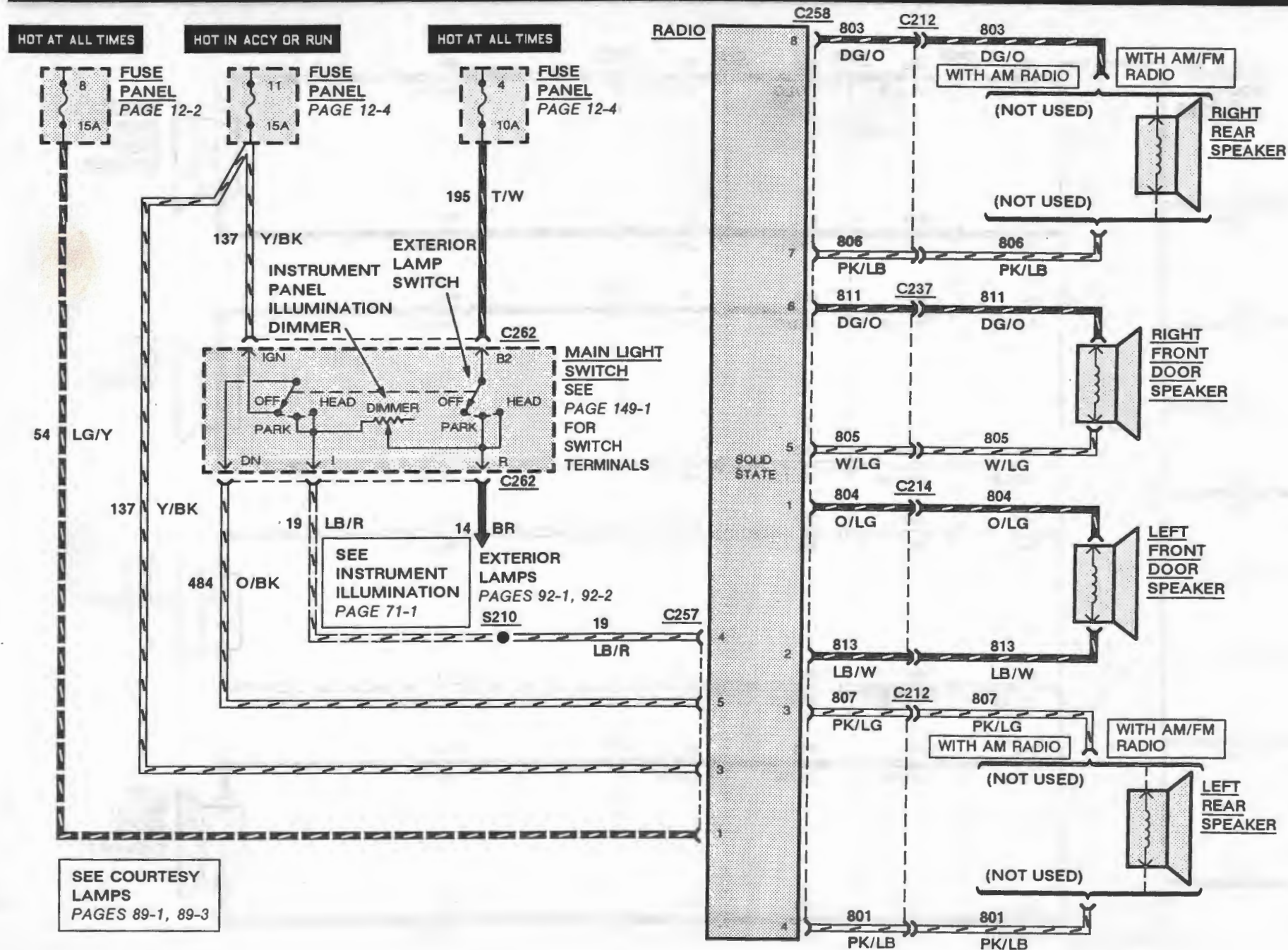
HOT AT ALL TIMES



RADIO (PREMIUM SOUND) 130-2



130-3 RADIO (AM, AM/FM STEREO)



| Component | Location | Page Figure | Connector Page |
|------------------------------------|--|-------------|----------------|
| Fuse Panel | Behind LH side of I/P | 151- 11-1 | |
| Main Light Switch | Behind LH side of I/P | 151- 8-3 | 150- 9 |
| Premium Sound Amplifier | RH rear side of cargo area | 151- 18-2 | 150-14 |
| C238 | Behind center of I/P, on radio | 151- 14-2 | 150-13 |
| C240 | Behind center of I/P, on radio | 151- 14-2 | 150-13 |
| C257 (without Premium Sound) | Behind center of I/P, on radio | 151- 14-2 | 150-12 |
| C258 (without Premium Sound) | Behind center of I/P, on radio | 151- 14-2 | 150-12 |
| C262 | Behind LH side of I/P, on main light switch | 151- 8-3 | 150- 9 |
| C453 | RH rear side of cargo area, on premium sound amplifier | 151- 18-2 | 150-14 |
| C454 | RH rear side of cargo area, on premium sound amplifier | 151- 18-2 | 150-14 |

Refer to Location Index page 152-1 for Connector, Diode, Resistor, Splice, Ground and Base Part Number descriptions and locations.

HOW THE CIRCUIT WORKS

With the Ignition Switch in ACCY or RUN, voltage is applied through Fuse 11 to operate the Radio.

Fuse 8 applies voltage to the Radio at all times to power the memory-related functions, which retain the Radio's memory positions with the Radio turned off.

Panel dimming is controlled by the Instrument Panel Illumination Dimmer. A variable voltage is applied through the 19 (LB/R) wire to control the brightness of the panel lamps.

The display's brightness is controlled by the Main Light Switch. When the park lamps are turned on, battery voltage is applied to the Radio through the 484 (O/BK) wire. The display will dim. When the park lamps are turned off, voltage is no longer applied to the Radio, and the display brightens.

Premium Sound

The Premium Sound System feature incorporates a Radio with a cassette deck and a four channel Amplifier. Voltage is applied to the Amplifier from Fuse 11 through the 137 (Y/BK) wire when the Ignition Switch is in RUN or ACCY. Voltage is applied to the Amplifier through the 747 (O/LB) wire when the Radio is turned on. The Amplifier is grounded through the Radio and 694 (R) wire. The Radio provides an audio signal for each channel through the 804 (O/LG), 805 (W/LG), 806 (PK/LB), and 807 (PK/LG) wires. The Amplifier processes the audio signal provided by the Radio and supplies it to the individual speakers.

130-5 RADIO

TROUBLESHOOTING HINTS

| CONDITION | POSSIBLE CAUSE | ACTION |
|--|---|--|
| <ul style="list-style-type: none"> Panel dimming lamps don't light or dim properly | <ul style="list-style-type: none"> Open 19 (LB/R) wire Inoperative Radio | <ul style="list-style-type: none"> With headlamps on and dimming switch set at maximum, check for voltage in 19 (LB/R) wire at Radio connector If voltage isn't present, check 19 (LB/R) wire for an open. If voltage is present, remove Radio for service. |
| <ul style="list-style-type: none"> Display doesn't dim with headlamps on | <ul style="list-style-type: none"> Open 484 (O/BK) wire Inoperative Radio | <ul style="list-style-type: none"> With headlamps on, check for voltage in 484 (O/BK) wire at Radio connector If voltage isn't present, repair 484 (O/BK) wire for an open. If voltage is present, remove Radio for service. |
| <ul style="list-style-type: none"> Radio doesn't appear to work. No sound from any Speaker. (Mono Radio only) | <ul style="list-style-type: none"> No power to Radio Antenna or Antenna cable Inoperative connection at connector C257 | <ul style="list-style-type: none"> With Ignition Switch in RUN, check for battery voltage in 137 (Y/BK) wire at Radio connector. If battery voltage isn't present, repair 137 (Y/BK) wire. Check for clean and tight Antenna connections. Refer to Shop Manual section 35-10 for Antenna tests. Check for good connection at Radio connector If all above checks are good, remove Radio for service |
| <ul style="list-style-type: none"> Radio doesn't appear to work. No sound from any Speaker. Radio display lights. | <ul style="list-style-type: none"> Antenna or cable Loss of power or ground to Amplifier (Premium Sound only) | <ul style="list-style-type: none"> Check Antenna and Antenna cable for clean and tight connections. Refer to Shop Manual section 35-10 for Antenna testing procedures With Ignition Switch in RUN, check for battery voltage in 137 (Y/BK) wire at Amplifier With Radio ON, check for battery voltage in 747 (O/LB) wire at Amplifier Check for continuity to ground in 694 (R) wire If battery voltage is measured at 137 (Y/BK) and 747 (O/LB) and ground is good, remove Amplifier for service |

(continued)

TROUBLESHOOTING HINTS (continued)

| CONDITION | POSSIBLE CAUSE | ACTION |
|--|---|---|
| <ul style="list-style-type: none"> Radio doesn't appear to work. No sound from any Speakers. Radio display doesn't light. | <ul style="list-style-type: none"> Loss of power or ground to Radio | <ul style="list-style-type: none"> If Courtesy Lamps operate, Fuse 8 is OK Check for battery voltage in 54 (LG/Y) wire at Radio With Ignition Switch in RUN, check for battery voltage in 137 (Y/BK) wire at Radio Check ground If above checks are good, remove Radio for service |
| <ul style="list-style-type: none"> One Speaker doesn't work | <ul style="list-style-type: none"> Open Speaker Open or shorted Speaker leads | <ul style="list-style-type: none"> Disconnect Speaker leads from Radio. Connect an analog ohmmeter across suspect Speaker terminals. If Speaker pops, Speaker is OK. Remove Radio for service. If Speaker doesn't pop, repeat procedure at Speaker. If Speaker now pops, check for open or short in Speaker wires. |
| <ul style="list-style-type: none"> LCD Display is erratic | <ul style="list-style-type: none"> Low voltage to Radio | <ul style="list-style-type: none"> Check 54 (LG/Y) wire for 12 volts. If less than 12 volts, repair/replace Battery. |
| <ul style="list-style-type: none"> AM works; FM doesn't work | <ul style="list-style-type: none"> Inoperative Radio | <ul style="list-style-type: none"> Compare to a known good radio for FM operations. If Radio does not work as well, remove Radio for service |
| <ul style="list-style-type: none"> FM works; AM doesn't work | <ul style="list-style-type: none"> Inoperative Antenna or Antenna cable Inoperative Radio | <ul style="list-style-type: none"> Check Radio with a test Antenna. If reception improves, repair/replace Antenna. If reception does not improve, remove Radio for service. |
| <ul style="list-style-type: none"> Tape Deck sounds distorted or doesn't work | <ul style="list-style-type: none"> Foreign materials in Tape Deck Dirty Tape Deck heads | <ul style="list-style-type: none"> Remove foreign materials and/or clean Tape Deck heads |
| <ul style="list-style-type: none"> Popping noise through speakers that changes with RPM | <ul style="list-style-type: none"> Ignition System interference | <ul style="list-style-type: none"> Check for loose spark plug wire Check for inoperative spark plug Move all wiring away from Ignition and spark plug wires |

The first step in the process is to identify the problem. This is done by observing the symptoms and the conditions under which the problem occurs. The next step is to determine the cause of the problem. This is done by analyzing the symptoms and the conditions. The third step is to develop a plan of action to correct the problem. This is done by determining the steps that must be taken to correct the problem. The fourth step is to implement the plan of action. This is done by taking the steps that have been determined. The fifth step is to evaluate the results of the action. This is done by comparing the results with the original problem. If the problem has been corrected, the process is complete. If the problem has not been corrected, the process must be repeated.

The second step in the process is to determine the cause of the problem. This is done by analyzing the symptoms and the conditions. The third step is to develop a plan of action to correct the problem. This is done by determining the steps that must be taken to correct the problem. The fourth step is to implement the plan of action. This is done by taking the steps that have been determined. The fifth step is to evaluate the results of the action. This is done by comparing the results with the original problem. If the problem has been corrected, the process is complete. If the problem has not been corrected, the process must be repeated.

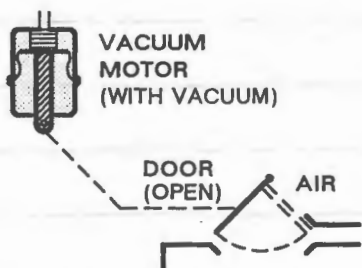
The third step in the process is to develop a plan of action to correct the problem. This is done by determining the steps that must be taken to correct the problem. The fourth step is to implement the plan of action. This is done by taking the steps that have been determined. The fifth step is to evaluate the results of the action. This is done by comparing the results with the original problem. If the problem has been corrected, the process is complete. If the problem has not been corrected, the process must be repeated.

The fourth step in the process is to implement the plan of action. This is done by taking the steps that have been determined. The fifth step is to evaluate the results of the action. This is done by comparing the results with the original problem. If the problem has been corrected, the process is complete. If the problem has not been corrected, the process must be repeated.

The fifth step in the process is to evaluate the results of the action. This is done by comparing the results with the original problem. If the problem has been corrected, the process is complete. If the problem has not been corrected, the process must be repeated.

141-1 VACUUM SYMBOLS

"T" JUNCTION



VACUUM ON VACUUM MOTOR PULLS DOOR OPEN TO LET AIR PASS THROUGH



TO SYSTEM

FROM VACUUM DISTRIBUTION



"CUT" HOSES REFERENCED BETWEEN PAGES
ARROW SHOWS VACUUM FLOW
FROM MANIFOLD FITTING TO COMPONENT



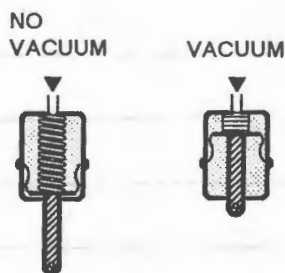
ALTERNATE VACUUM PATHS

NOTE

Other vacuum symbols used on vacuum system diagrams are fully explained on these pages.

VACUUM MOTOR OPERATIONS

SINGLE DIAPHRAGM MOTOR



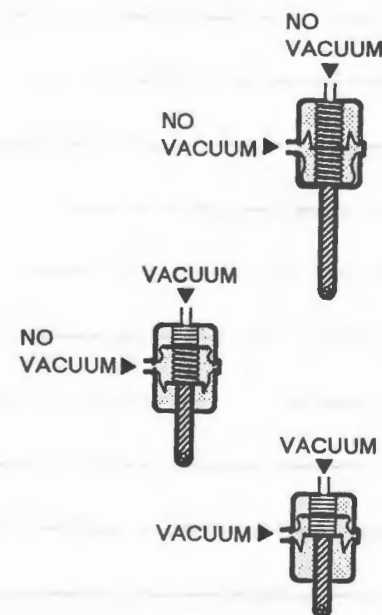
Vacuum motors operate like electrical solenoids, mechanically pushing or pulling a shaft between two fixed positions. When vacuum is applied, the shaft is pulled in. When no vacuum is applied, the shaft is pushed all the way out by a spring.

SERVO MOTOR



Some vacuum motors, such as the Servo Motor in the Speed Control, can position the actuating arm at any position between fully extended and fully retracted. The Servo is operated by a control valve that applies varying amounts of vacuum to the motor. The higher the vacuum level, the greater the retraction of the motor arm. Servo Motors work nearly the same way as two-position motors, except for the way the vacuum is applied. Servo Motors are generally larger and provide a calibrated control.

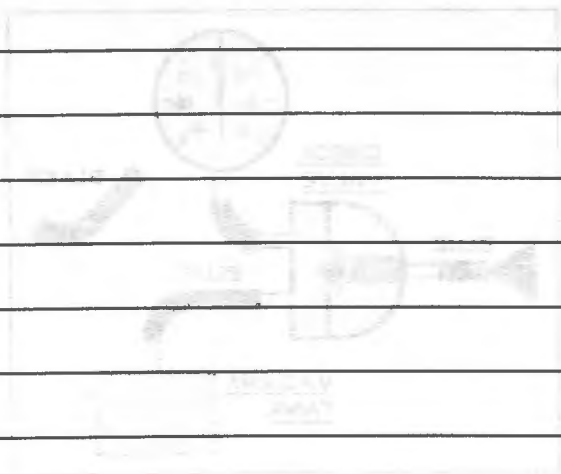
DOUBLE DIAPHRAGM MOTOR



A double diaphragm motor has three positions (it is actually two motors in one housing). When the top port gets vacuum, the shaft pulls halfway in. When both ports get vacuum, the shaft pulls all the way in.

TRUBLESHOOTING HINTS

1. Verify the Problem
2. Verify the System and Controls are in the correct position to check the vacuum and pressure of the customer's system.
3. Verify the Problem
4. Verify the System and Controls are in the correct position to check the vacuum and pressure of the customer's system.
5. Verify the Problem
6. Verify the System and Controls are in the correct position to check the vacuum and pressure of the customer's system.
7. Verify the Problem
8. Verify the System and Controls are in the correct position to check the vacuum and pressure of the customer's system.
9. Verify the Problem
10. Verify the System and Controls are in the correct position to check the vacuum and pressure of the customer's system.



1. Turn on Vacuum Pump and check vacuum.
2. Check vacuum gauge for correct operation.
3. Check vacuum line for correct operation.
4. Check vacuum pump for correct operation.
5. Check vacuum line for correct operation.
6. Check vacuum pump for correct operation.
7. Check vacuum line for correct operation.
8. Check vacuum pump for correct operation.
9. Check vacuum line for correct operation.
10. Check vacuum pump for correct operation.

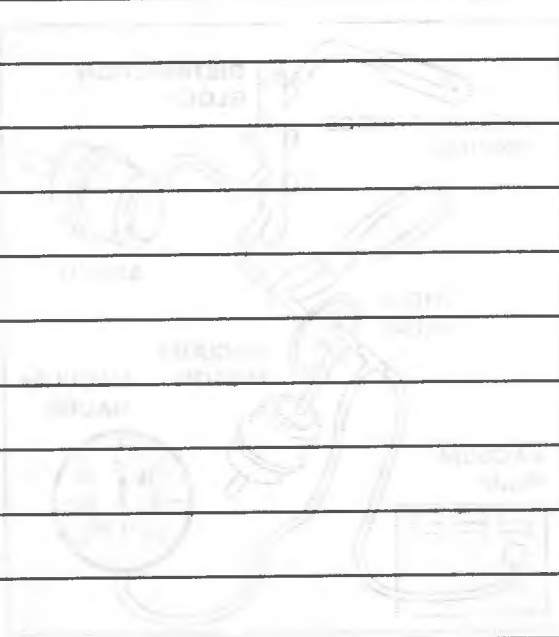
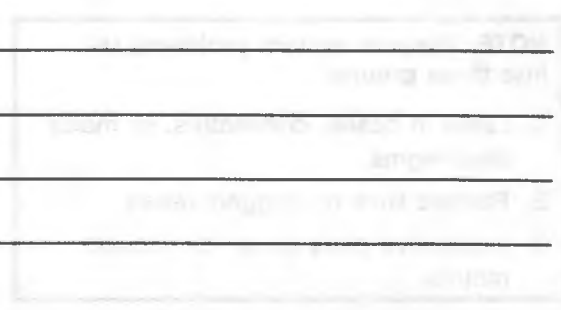


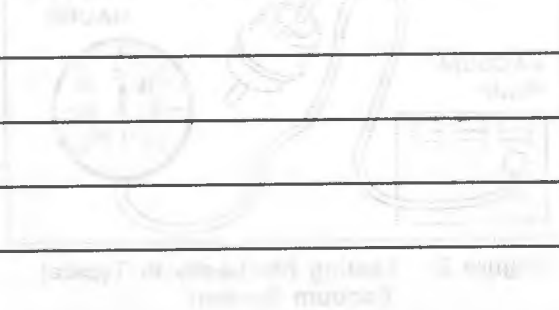
Figure 2: Finding the Vacuum Problem

1. Verify the Problem
2. Verify the System and Controls are in the correct position to check the vacuum and pressure of the customer's system.
3. Verify the Problem
4. Verify the System and Controls are in the correct position to check the vacuum and pressure of the customer's system.
5. Verify the Problem
6. Verify the System and Controls are in the correct position to check the vacuum and pressure of the customer's system.
7. Verify the Problem
8. Verify the System and Controls are in the correct position to check the vacuum and pressure of the customer's system.
9. Verify the Problem
10. Verify the System and Controls are in the correct position to check the vacuum and pressure of the customer's system.

1. Turn on Vacuum Pump and check vacuum.
2. Check vacuum gauge for correct operation.
3. Check vacuum line for correct operation.
4. Check vacuum pump for correct operation.
5. Check vacuum line for correct operation.
6. Check vacuum pump for correct operation.
7. Check vacuum line for correct operation.
8. Check vacuum pump for correct operation.
9. Check vacuum line for correct operation.
10. Check vacuum pump for correct operation.



1. Turn on Vacuum Pump and check vacuum.
2. Check vacuum gauge for correct operation.
3. Check vacuum line for correct operation.
4. Check vacuum pump for correct operation.
5. Check vacuum line for correct operation.
6. Check vacuum pump for correct operation.
7. Check vacuum line for correct operation.
8. Check vacuum pump for correct operation.
9. Check vacuum line for correct operation.
10. Check vacuum pump for correct operation.



142-1 HOW TO FIND THE VACUUM PROBLEM

TROUBLESHOOTING HINTS

These six steps present an orderly method of troubleshooting.

Step 1. Verify the Problem.

- Operate the system and observe all symptoms to check the accuracy and completeness of the customer's complaint.

Step 2. Narrow the Problem.

- Using the EVTm, narrow down the possible causes and locations of the problem to pinpoint the exact cause.

Step 3. Test the Cause.

- Use test procedures to find the specific cause of the symptoms.

Step 4. Verify the Cause.

- Confirm that the correct cause has been found by operating the parts of the circuit that may be good.

Step 5. Make the Repair.

- Repair or replace the inoperative component.

Step 6. Verify the Repair.

- Operate the system as in Step 1. Check that the repair has removed all symptoms without creating any new symptoms.

NOTE: Vacuum system problems fall into three groups:

1. Leaks in hoses, connectors, or motor diaphragms.
2. Pinched lines or clogged valves.
3. Inoperative parts driven by vacuum motors.

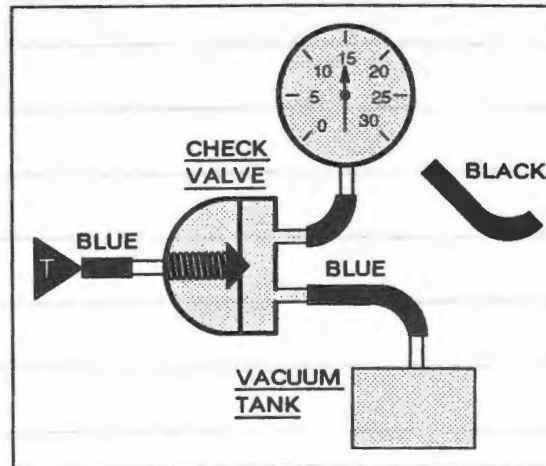


Figure 1 - System Supply Test

Vacuum Supply Test

1. Connect Vacuum Tester to system side of Check Valve (Figure 1).
2. Start engine. Gauge should show approximately 15 inches of vacuum.
3. Turn off engine and observe gauge:
 - If vacuum holds, supply OK.
 - If vacuum fails, replace Check Valve or Tank.

Leak Test

1. Connect Vacuum Gauge and Vacuum Pump (Figure 2) to system hose in place of tank.
2. Open valve and start pump. Operate control in all modes.
3. Listen for hiss and observe gauge.

NOTE: Hissing is normal at Function Control when changing modes.

If system hisses or loses vacuum, find system leak as follows:

1. Turn on Vacuum Pump and check vacuum build-up.
2. Stop pump; vacuum should drop.
3. Clamp supply hoses with needlenose pliers one at a time until vacuum stops dropping (Figure 2).
4. Check vacuum schematic to find components in that line.
5. Clamp hoses through circuit to find leak.

Component Test

1. Connect Vacuum Tester to component.
2. Pump Vacuum Tester. Check that all components operate correctly and vacuum holds.
3. Replace component if vacuum does not hold.

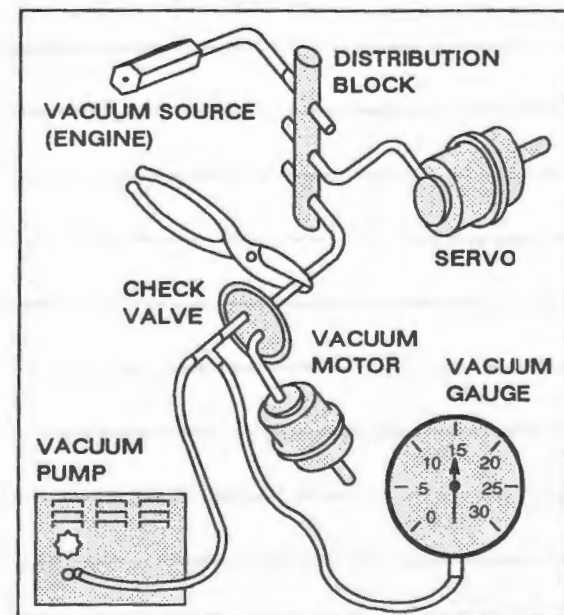


Figure 2 - Testing For Leaks In Typical Vacuum System

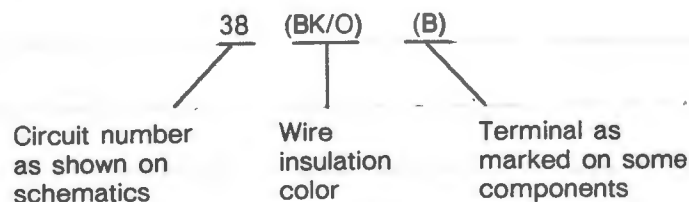
149-1 COMPONENT TESTING: INTRODUCTION/MAIN LIGHT SWITCH

INTRODUCTION

Component testing procedures are provided to determine whether a component is good or bad.

Testing information for each component includes a schematic with component terminal locations and step-by-step test procedures. Component terminals are identified by:

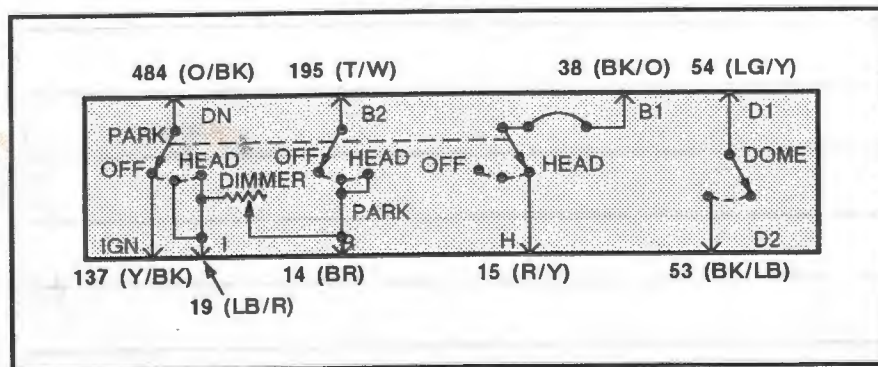
1. the circuit number of the wires that connect to that terminal,
2. the wire insulation color, and
3. letters or numbers that may be marked on the component.



The component connector **MUST BE REMOVED** before testing. To test a single circuit within the component, select that circuit under the column **TO TEST**. If you wish to test the complete component, perform all tests.

Connect the tester to the terminals shown in the second column and operate the component as shown in the third column.

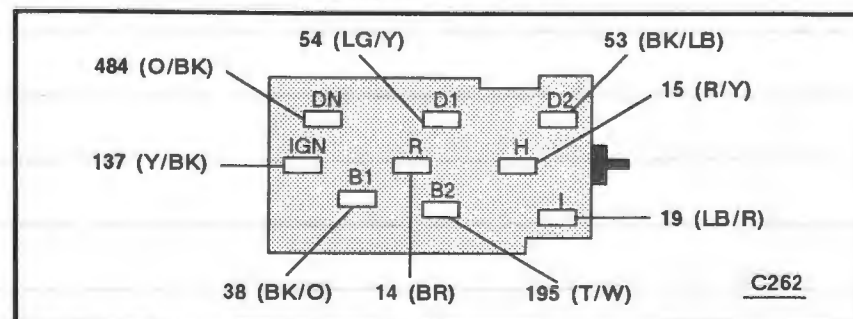
SCHEMATIC



COMPONENT TESTING PROCEDURE

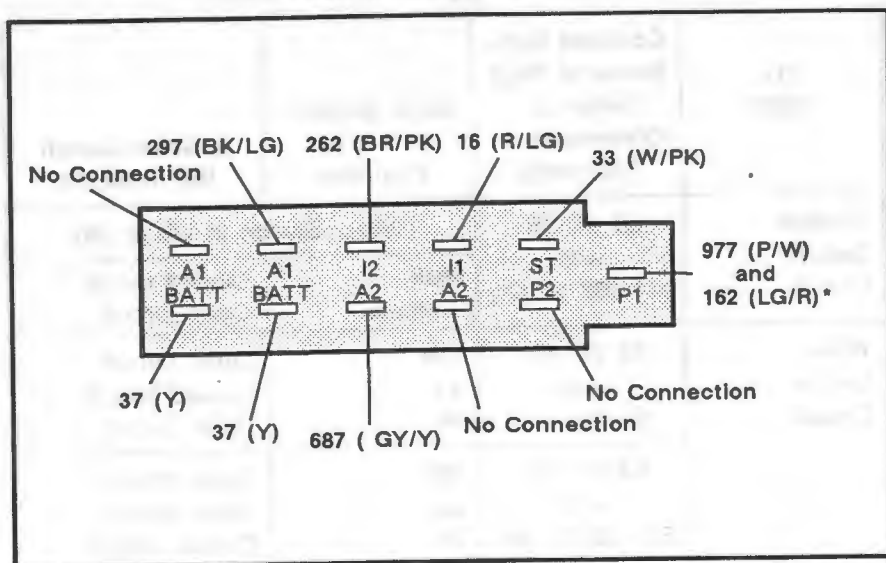
| TO TEST | Connect Self-Powered Test Lamp or Ohmmeter to Terminals | Move Switch to These Positions | A Good Switch Will Indicate |
|---------------------------------|---|--|---|
| Headlamp Circuit | 38 (BK/O) (B1) and 15 (R/Y) (H) | Off
Park
Head | Open circuit
Open circuit
Closed circuit |
| Park Lamp Circuit | 195 (T/W) (B2) and 14 (BR) (R) | Off
Park
Head | Open circuit
Closed circuit
Closed circuit |
| Dome Lamp Circuit | 54 (LG/Y) (D1) and 53 (BK/LB) (D2) | Thumbwheel rotated full left (in Detent)
Rotated right (Any Amount Out of Detent) | Closed circuit
Open circuit |
| Panel Lamp Dimmer Circuit | 14 (BR) (R) and 19 (LB/R) (I) | Thumbwheel rotated left from full right position | Ohmmeter will show smoothly increasing resistance |
| Radio and Clock Display Circuit | 484 (O/BK) (DN) and 137 (Y/BK) (IGN) | Off
Park
Head | Closed circuit
Open circuit
Open circuit |

TERMINAL LOCATIONS

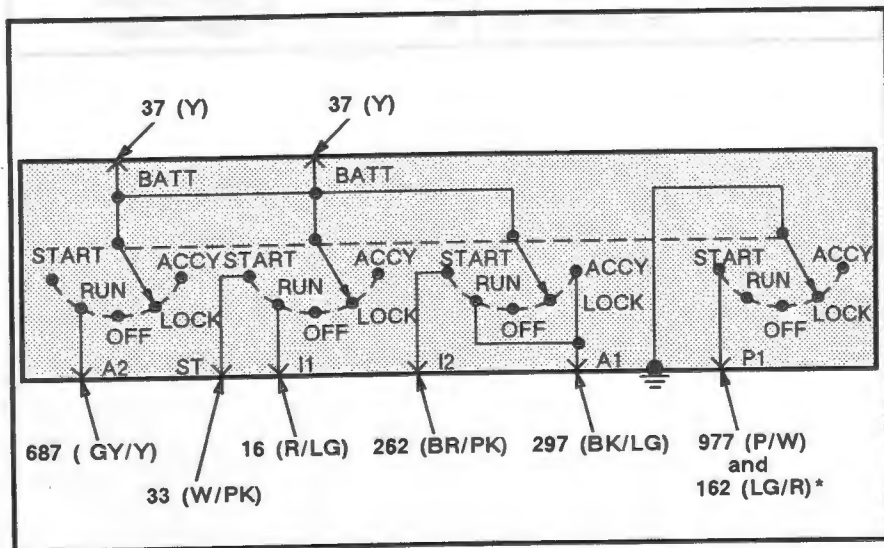


COMPONENT TESTING: IGNITION SWITCH (WITH SWITCH INSTALLED) 149-2

TERMINAL LOCATIONS



SCHEMATIC



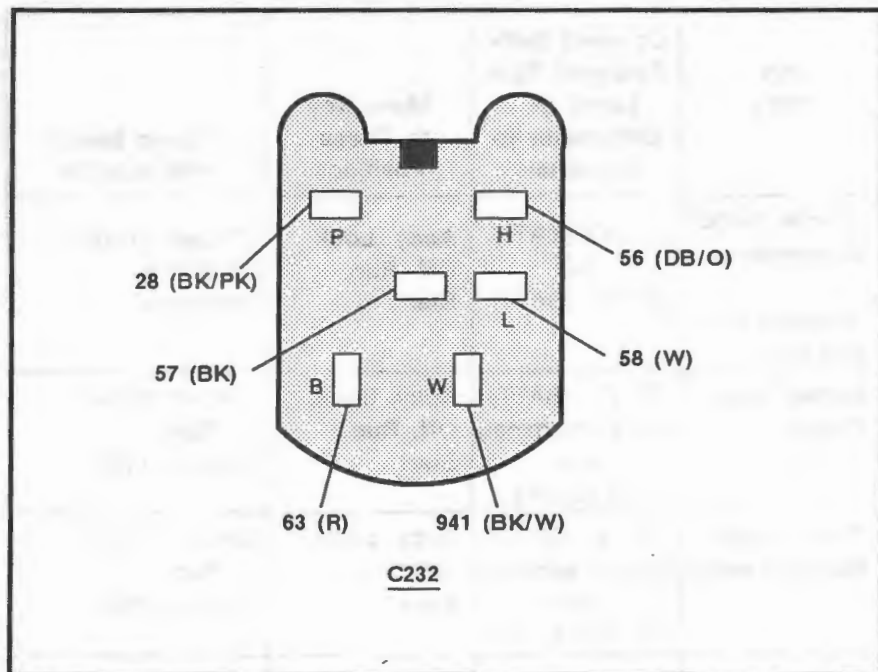
* 162 (LG/R) NOT USED WITH DAYTIME RUNNING LAMPS (DRL)

COMPONENT TESTING PROCEDURE

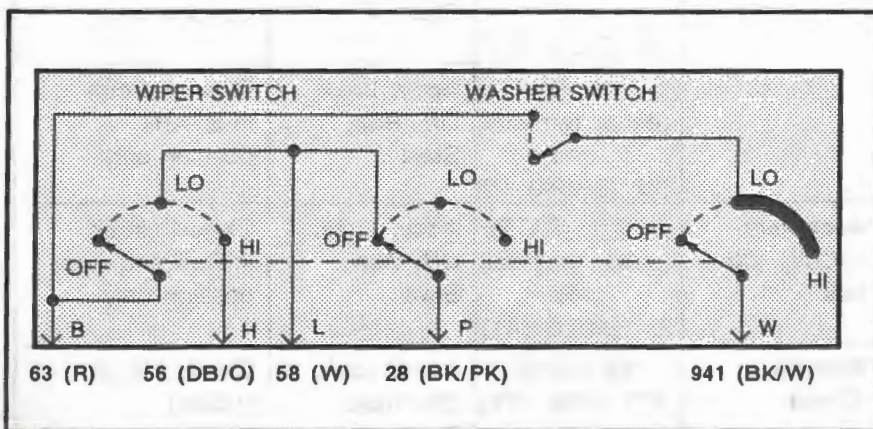
| TO TEST | Connect Self-Powered Test Lamp or Ohmmeter to Terminals | Move Key to These Positions | A Good Switch Will Indicate |
|--|---|-----------------------------|--|
| Internal Switch Connections
(perform this test first) | 37 (Y) (BATT) and 37 (Y) (BATT) | Accy, Lock, Off, Run, Start | Closed circuit in all five positions |
| Starter Relay Circuit | 37 (Y) (BATT) (either terminal) and 33 (W/PK) | Accy, Lock, Off, Run, Start | Closed circuit in Start position only |
| Turn Lamps Backup Lamps | 37 (Y) (BATT) (either terminal) and 687 (GY/Y) (A2) | Accy, Lock, Off, Run, Start | Closed circuit in Run position only |
| Ignition Circuit | 37 (Y) (BATT) (either terminal) and 16 (R/LG) (I1) | Accy, Lock, Off, Run, Start | Closed circuit in Run position only |
| | 37 (Y) (BATT) (either terminal) and 262 (BR/PK) (I2) | Accy, Lock, Off, Run, Start | Closed circuit in START position only |
| Accessory (ACCY) Circuit | 37 (Y) (BATT) (either terminal) and 297 BK/LG (A1) | Accy, Lock, Off, Run, Start | Closed circuit in Run and Accy position only |
| Bulb-Test Circuit | 162 (LG/R)* 977 (P/W) (P1) and Ignition Switch Case | Accy, Lock, Off, Run, Start | Closed circuit in Start position only |

149-3 COMPONENT TESTING: WINDSHIELD WIPER/WASHER SWITCH

TERMINAL LOCATIONS



SCHEMATIC

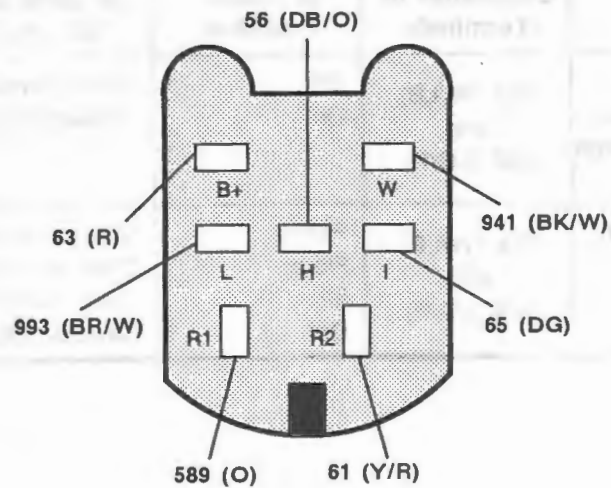


COMPONENT TESTING PROCEDURE

| TO TEST | Connect Self-Powered Test Lamp or Ohmmeter to Terminals | Move Switch to These Positions | A Good Switch Will Indicate |
|-----------------------|---|--------------------------------|--------------------------------|
| Washer Switch Circuit | 63 (R) (B) and 941 (BK/W) (W) | (Wiper Switch In LO or HI) | |
| | | Pull Release | Closed circuit
Open circuit |
| Wiper Switch Circuit | 63 (R) (B) and 58 (W) (L) | Off | Open circuit |
| | | Lo | Closed circuit |
| | | Hi | Open circuit |
| | 63 (R) (B) and 56 (DB/O) (H) | Off | Open circuit |
| | | Lo | Open circuit |
| | | Hi | Closed circuit |
| | 58 (W) (L) and 28 (BK/PK) (P) | Off | Closed circuit |
| | | Lo | Open circuit |
| | | Hi | Open circuit |

COMPONENT TESTING: INTERVAL WIPER/WASHER SWITCH 149-4

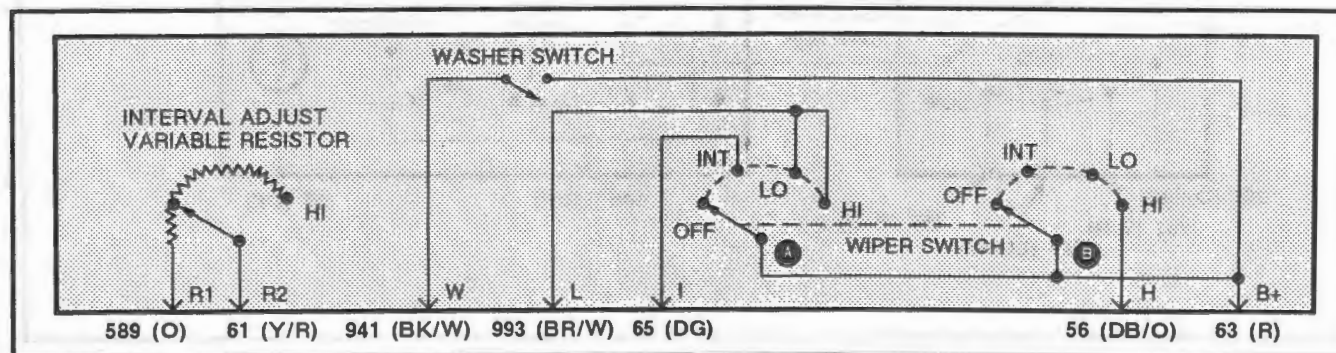
TERMINAL LOCATIONS



COMPONENT TESTING PROCEDURE

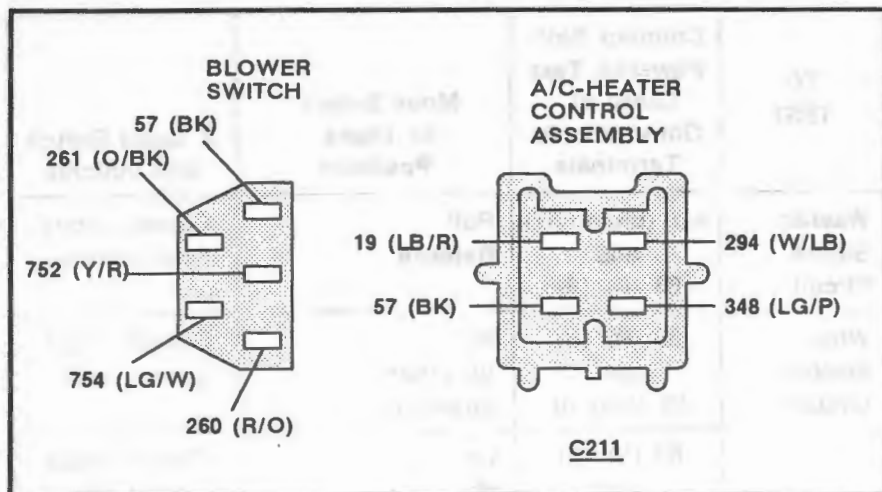
| TO TEST | Connect Self-Powered Test Lamp or Ohmmeter to Terminals | Move Switch to These Positions | A Good Switch Will Indicate |
|-----------------------|---|--|--|
| Washer Switch Circuit | 941 (BK/W) (W) and 63 (R) (B) | Pull Release | Closed circuit
Open circuit |
| Wiper Switch Circuit | 63 (R) (B) and 65 (DG) (I) | INT
All other positions | Closed circuit
Open circuit |
| | 63 (R) (B) and 993 (BR/W) (L) | Lo
Hi
All other positions | Closed circuit
Closed circuit
Open circuit |
| | 63 (R) (B) and 56 (DB/O) (H) | Hi
All other positions | Closed circuit
Open circuit |
| Interval Time Adjust | 61 (Y/R) (R2) and 589 (O) (R1) | Rotate Control Clockwise... Ohmmeter will indicate smoothly increasing resistance from 420/880 Ohms minimum to 7,000/13,000 Ohms maximum | |

SCHEMATIC



149-5 COMPONENT TESTING: A/C-HEATER FUNCTION CONTROL

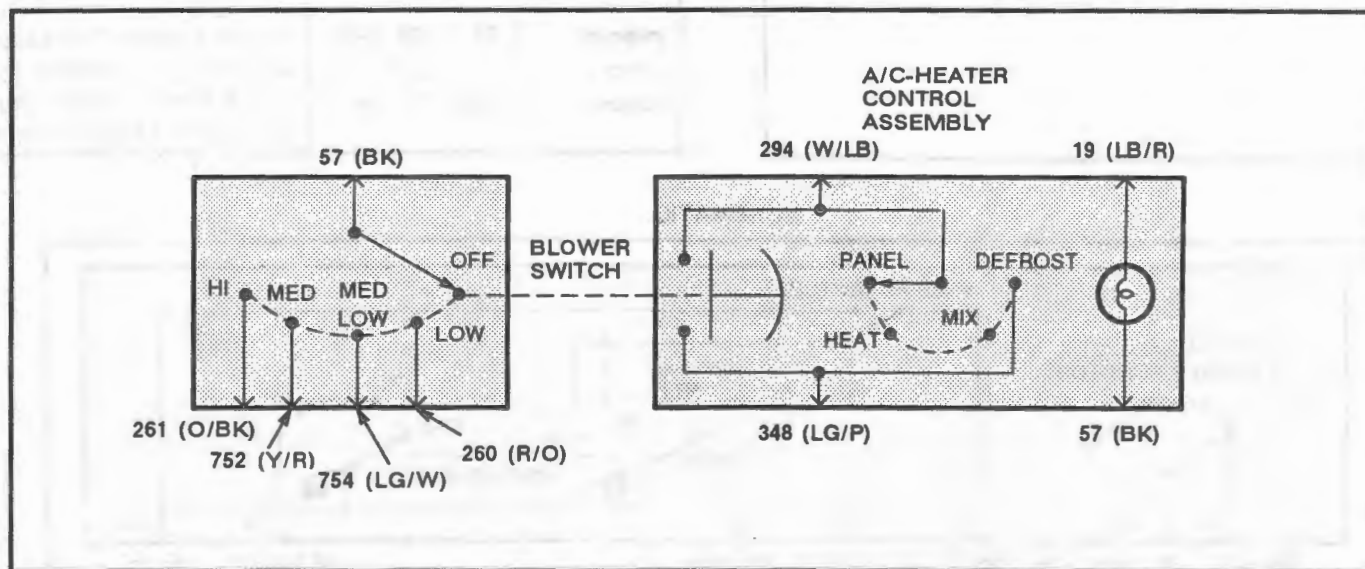
TERMINAL LOCATIONS



COMPONENT TESTING PROCEDURE

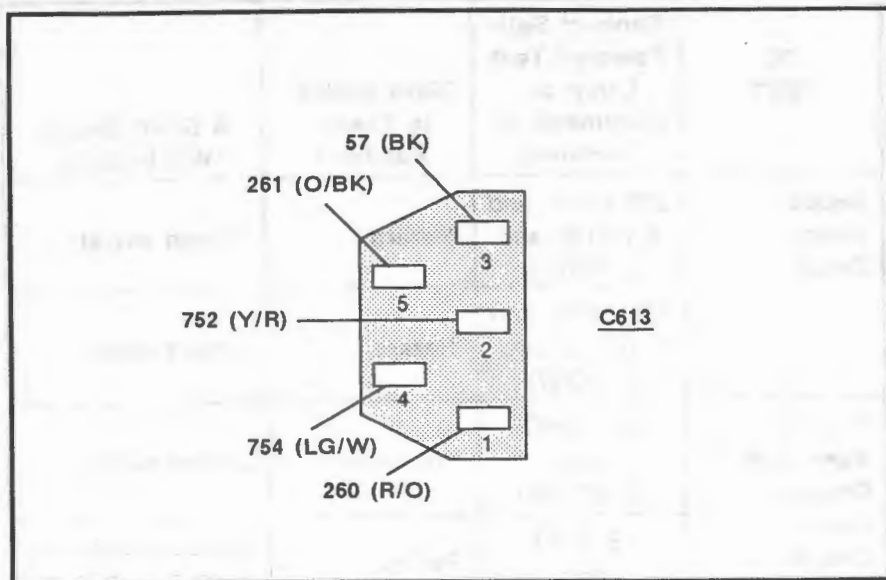
| TO TEST | Connect Self-Powered Test Lamp or Ohmmeter to Terminals | Move Switch to These Positions | A Good Switch Will Indicate |
|---|---|--------------------------------|--|
| A/C Push Button Switch (Blower Switch On) | 294 (W/LB) and 348 (LG/P) | Off
On | Open circuit
Closed circuit |
| A/C Function Switch | 294 (W/LB) and 348 (LG/P) | Panel
Floor
Mix
Def | Open circuit
Open circuit
Open circuit
Closed circuit |

SCHEMATIC

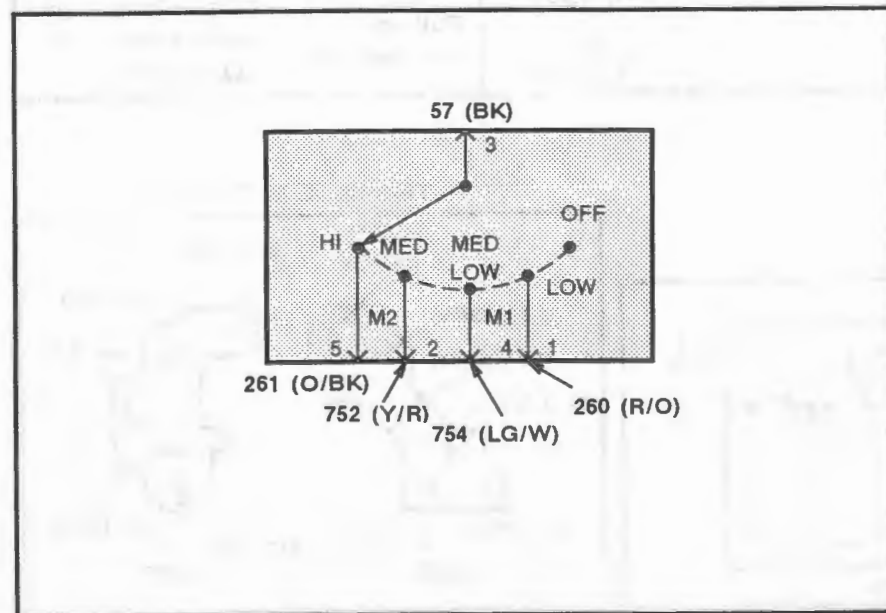


COMPONENT TESTING: BLOWER SWITCH 149-6

TERMINAL LOCATIONS



SCHEMATIC



COMPONENT TESTING PROCEDURE

| TO TEST | Connect Self-Powered Test Lamp or Ohmmeter to Terminals | Move Switch to These Positions | A Good Switch Will Indicate |
|------------------|---|--------------------------------|--|
| Lo Speed | 57 (BK) (3) and 260 (R/O) (1) | Lo
M1
M2
Hi | Closed circuit
Open circuit
Open circuit
Open circuit |
| Medium Low Speed | 57 (BK) (3) and 754 (LG/W) (4) | Lo
M1
M2
Hi | Open circuit
Closed circuit
Open circuit
Open circuit |
| Medium Speed | 57 (BK) (3) and 752 (Y/R) (2) | Lo
M1
M2
Hi | Open circuit
Open circuit
Closed circuit
Open circuit |
| High Speed | 57 (BK) (3) and 261 (O/BK) (5) | Lo
M1
M2
Hi | Open circuit
Open circuit
Open circuit
Closed circuit |

149-7 COMPONENT TESTING: MULTI-FUNCTION SWITCH

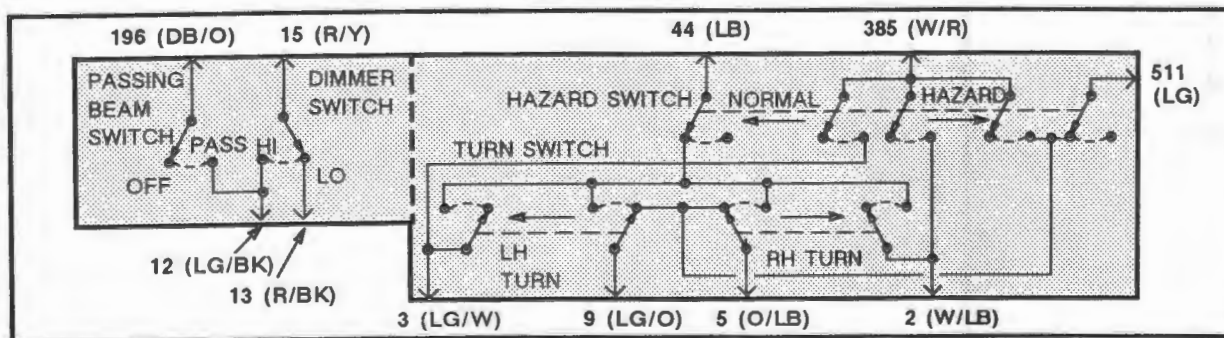
COMPONENT TESTING PROCEDURE

| TO TEST | Connect Self-Powered Test Lamp or Ohmmeter to Terminals | Move Switch to These Positions | A Good Switch Will Indicate |
|--------------------------------|---|--|-----------------------------|
| Stop Lamp Feed-Through Circuit | 511 (LG) and 9 (LG/O) | Turn Switch to center (no turn) position | Closed circuit |
| | 511 (LG) and 5 (O/LB) | Turn Switch to center (no turn) position | Closed circuit |
| Turn Switch Circuit | 44 (LB) and 9 (LG/O) | Turn Switch to Left Turn and Hazard Switch to Normal | Closed circuit |
| | 44 (LB) and 3 (LG/W) | Turn Left | Closed circuit |
| | 44 (LB) and 5 (O/LB) | Turn Right | Closed circuit |
| | 44 (LB) and 2 (W/LB) | Turn Right | Closed circuit |

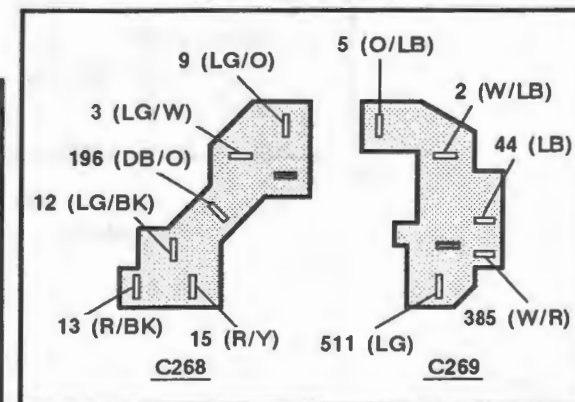
COMPONENT TESTING PROCEDURE

| TO TEST | Connect Self-Powered Test Lamp or Ohmmeter to Terminals | Move Switch to These Positions | A Good Switch Will Indicate |
|--|---|--------------------------------|---|
| Hazard Switch Circuit | 385 (W/R) and 5 (O/LB) and 2 (W/LB) | Hazard | Closed circuit |
| | 385 (W/R) and 9 (LG/O) and 3 (LG/W) | Hazard | Closed circuit |
| Passing Beam and Dimmer Switch Circuit | 196 (DB/O) and 12 (LG/BK) | Pull halfway up | Closed circuit |
| | 15 (R/Y) and 12 (LG/BK) | Pull up and Release | Closed circuit only when switch is in HI position |
| | 15 (R/Y) and 13 (R/BK) | Pull up and Release | Closed circuit only when switch is in LO position |

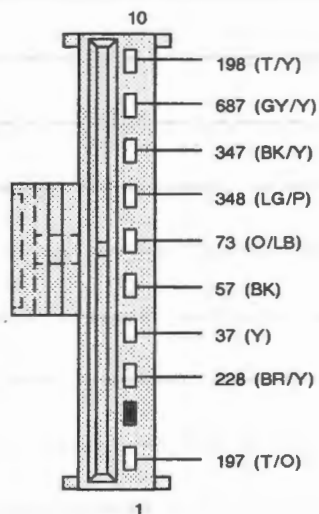
SCHEMATIC



TERMINAL LOCATIONS

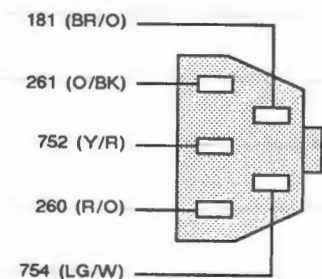


150-1 CONNECTOR FACES/PINOUT CHARTS

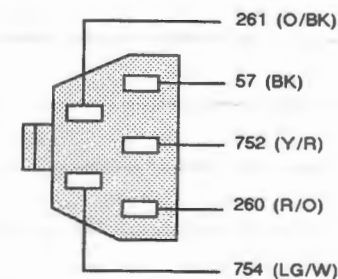


A/C CONTROLLER

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|------------|--|
| 1 | 197 (T/O) | Cooling Fan Temperature Switch Input |
| 2 | — | NOT USED |
| 3 | 228 (BR/Y) | Engine Cooling Fan Input |
| 4 | 37 (Y) | Battery |
| 5 | 57 (BK) | Ground |
| 6 | 73 (O/LB) | Electronic Engine Control (EEC) Module Input |
| 7 | 348 (LG/P) | A/C Controller Timer Input |
| 8 | 347 (BK/Y) | A/C Clutch Field Coil Feed |
| 9 | 687 (GY/Y) | Accy Feed |
| 10 | 198 (T/Y) | A/C Clutch Cycling Pressure Switch Input |

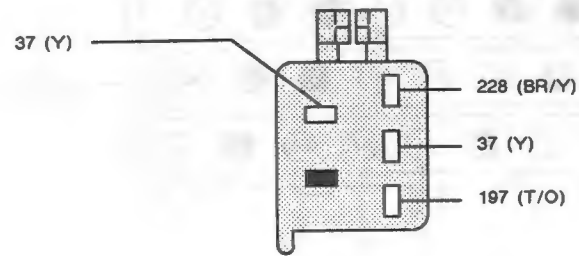


BLOWER MOTOR RESISTOR

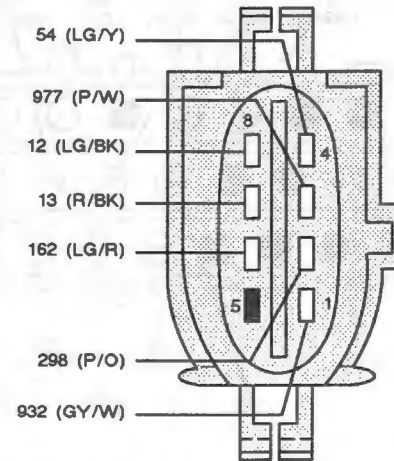


BLOWER SWITCH

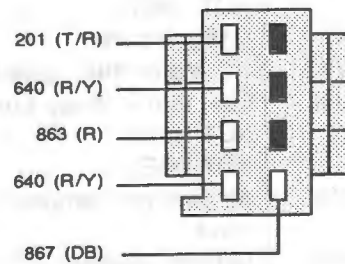
CONNECTOR FACES/PINOUT CHARTS 150-2



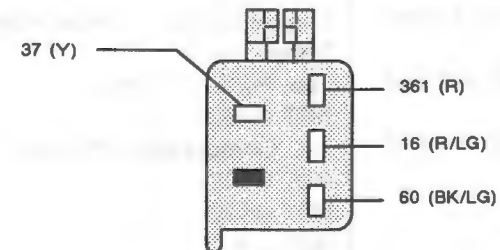
COOLING FAN RELAY



DAYTIME RUNNING LAMPS (DRL) MODULE

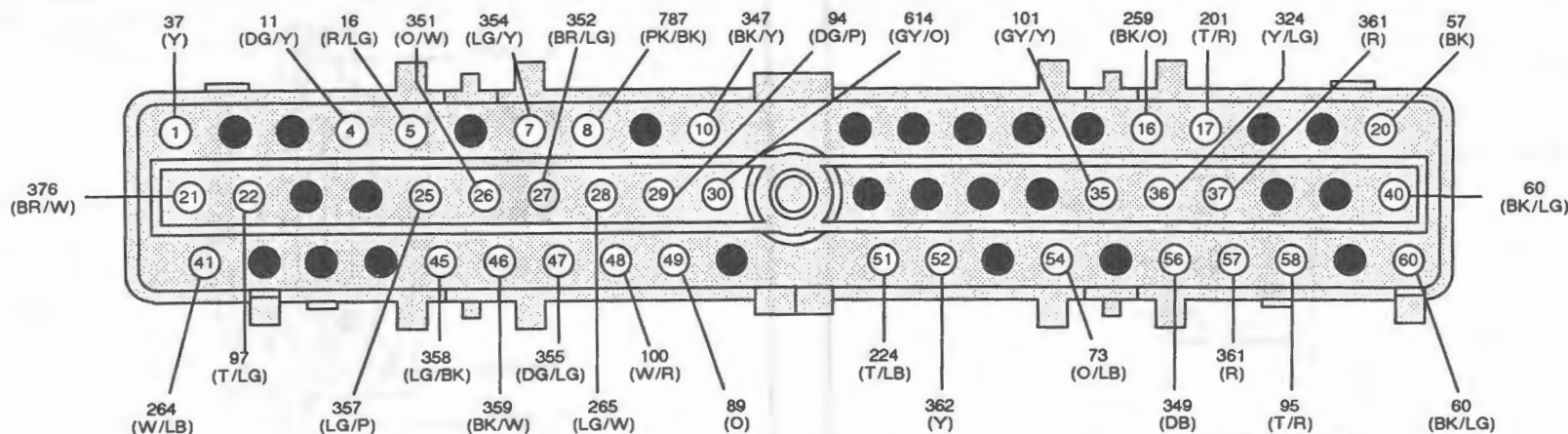


DOOR AJAR WARNING LAMP MODULE



EEC POWER RELAY

150-3 CONNECTOR FACES/PINOUT CHARTS



ELECTRONIC ENGINE CONTROL (EEC) MODULE (CFI)

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION | PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|--|------------|-------------|---|
| 1 | 37 (Y) | Keep Alive Power | 16 | 259 (BK/O) | TFI Ignition Ground |
| 2 | — | NOT USED | 17 | 201 (T/R) | Engine Malfunction Indicator Enable/
Self-test Input |
| 3 | — | NOT USED | 18 | — | NOT USED |
| 4 | 11 (DG/Y) | Ignition Diagnostic Monitor | 19 | — | NOT USED |
| 5 | 16 (R/LG) | Key-On Power | 20 | 57 (BK) | Case Ground |
| 6 | — | NOT USED | 21 | 376 (BR/W) | DC Motor Idle Speed Control |
| 7 | 354 (LG/Y) | Engine Coolant Temperature
Sensor Input | 22 | 97 (T/LG) | Fuel Pump Relay Enable |
| 8 | 787 (PK/BK) | Fuel Pump ON Input | 23 | — | NOT USED |
| 9 | — | NOT USED | 24 | — | NOT USED |
| 10 | 347 (BK/Y) | A/C Compressor ON Input | 25 | 357 (LG/P) | Air Charge Temperature Sensor
Input |
| 11 | — | NOT USED | 26 | 351 (O/W) | Sensor Reference Volage (+) |
| 12 | — | NOT USED | 27 | 352 (BR/LG) | PFE EGR Transducer Input |
| 13 | — | NOT USED | 28 | 265 (LG/W) | Idle Tracking Switch Input |
| 14 | — | NOT USED | 29 | 94 (DG/P) | HEGO Sensor Input |
| 15 | — | NOT USED | 30 | 614 (GY/O) | Neutral Drive Switch Input (A/T Only) |

(Continued on next page)

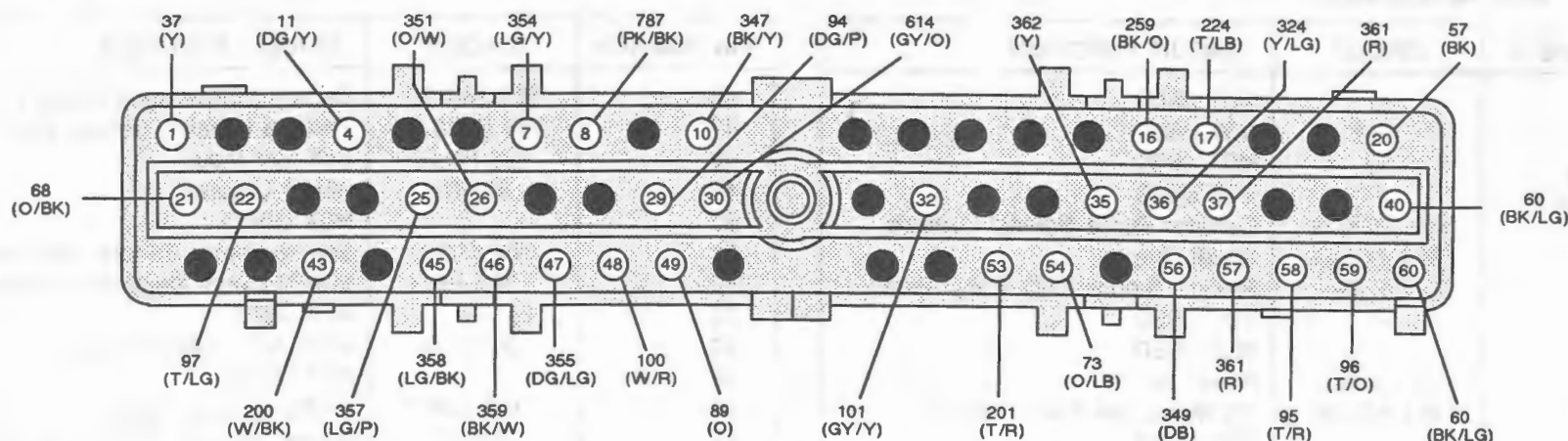
CONNECTOR FACES/PINOUT CHARTS 150-4

(Continued from previous page)

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|---|
| 31 | — | NOT USED |
| 32 | — | NOT USED |
| 33 | — | NOT USED |
| 34 | — | NOT USED |
| 35 | 101 (GY/Y) | Canister Purge Solenoid Enable |
| 36 | 324 (Y/LG) | Spark Output |
| 37 | 361 (R) | Power Through EEC Power Relay |
| 38 | — | NOT USED |
| 39 | — | NOT USED |
| 40 | 60 (BK/LG) | Power Ground |
| 41 | 264 (W/LB) | DC Motor Idle Speed Control |
| 42 | — | NOT USED |
| 43 | — | NOT USED |
| 44 | — | NOT USED |
| 45 | 358 (LG/BK) | Manifold Absolute Pressure Sensor Input |

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|-----------------------------------|
| 46 | 359 (BK/W) | Sensor Reference Voltage (-) |
| 47 | 355 (DG/LG) | Throttle Position Sensor Input |
| 48 | 100 (W/R) | Self-test Input |
| 49 | 89 (O) | HEGO Ground |
| 50 | — | NOT USED |
| 51 | 224 (T/LB) | Shift Indicator Enable (M/T Only) |
| 52 | 362 (Y) | EGR Vacuum Regulator Output |
| 53 | — | NOT USED |
| 54 | 73 (O/LB) | WOT A/C Cutout Output |
| 55 | — | NOT USED |
| 56 | 349 (DB) | Profile Ignition Pickup |
| 57 | 361 (R) | Power Through EEC Power Relay |
| 58 | 95 (T/R) | Fuel Injector Output |
| 59 | — | NOT USED |
| 60 | 60 (BK/LG) | Power Ground |

150-5 CONNECTOR FACES/PINOUT CHARTS



ELECTRONIC ENGINE CONTROL (EEC) MODULE (EFI)

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION | PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|---|------------|------------|--|
| 1 | 37 (Y) | Keep Alive Power | 16 | 259 (BK/O) | TFI Ignition Ground |
| 2 | — | NOT USED | 17 | 224 (T/LB) | Shift Indicator Enable/Self-test Input |
| 3 | — | NOT USED | 18 | — | NOT USED |
| 4 | 11 (DG/Y) | Ignition Diagnostic Monitor | 19 | — | NOT USED |
| 5 | — | NOT USED | 20 | 57 (BK) | Case Ground |
| 6 | — | NOT USED | 21 | 68 (O/BK) | Idle Air Bypass Valve Output |
| 7 | 354 (LG/Y) | Engine Coolant Temperature Sensor Input | 22 | 97 (T/LG) | Fuel Pump Relay Enable |
| 8 | 787 (PK/BK) | Fuel Pump ON Input | 23 | — | NOT USED |
| 9 | — | NOT USED | 24 | — | NOT USED |
| 10 | 347 (BK/Y) | A/C Compressor ON Input | 25 | 357 (LG/P) | Vane Air Temperature Input |
| 11 | — | NOT USED | 26 | 351 (O/W) | Sensor Reference Voltage (+) |
| 12 | — | NOT USED | 27 | — | NOT USED |
| 13 | — | NOT USED | 28 | — | NOT USED |
| 14 | — | NOT USED | 29 | 94 (DG/P) | HEGO Sensor Input |
| 15 | — | NOT USED | 30 | 614 (GY/O) | Neutral Switch/Clutch Switch Input |

(Continued on next page)

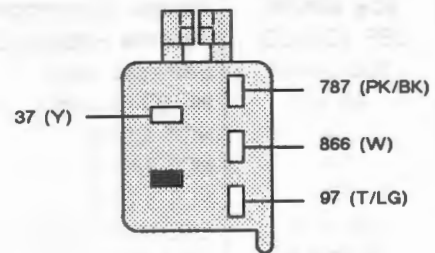
CONNECTOR FACES/PINOUT CHARTS 150-6

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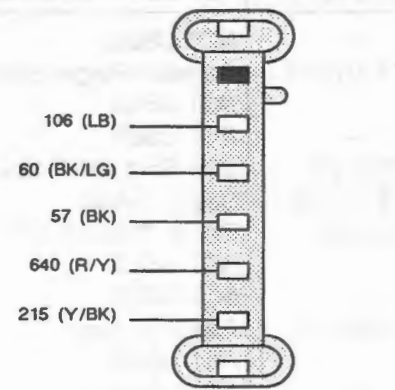
| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|---|
| 31 | — | NOT USED |
| 32 | 101 (GY/Y) | Canister Purge Solenoid Enable |
| 33 | — | NOT USED |
| 34 | — | NOT USED |
| 35 | 362 (Y) | EGR Shut Off Output |
| 36 | 324 (Y/LG) | Spark Output |
| 37 | 361 (R) | Power Through EEC Power Relay |
| 38 | — | NOT USED |
| 39 | — | NOT USED |
| 40 | 60 (BK/LG) | Power Ground |
| 41 | — | NOT USED |
| 42 | — | NOT USED |
| 43 | 200 (W/BK) | Vane Air Flow Input |
| 44 | — | NOT USED |
| 45 | 358 (LG/BK) | Barometric Absolute Pressure Sensor Input |

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|-------------------------------------|
| 46 | 359 (BK/W) | Sensor Reference Voltage (-) |
| 47 | 355 (DG/LG) | Throttle Position Sensor Input |
| 48 | 100 (W/R) | Self-test Input |
| 49 | 89 (O) | HEGO Ground |
| 50 | — | NOT USED |
| 51 | — | NOT USED |
| 52 | — | NOT USED |
| 53 | 201 (T/R) | Engine Malfunction Indicator Enable |
| 54 | 73 (O/LB) | WOT A/C Cutout Output |
| 55 | — | NOT USED |
| 56 | 349 (DB) | Profile Ignition Pickup |
| 57 | 361 (R) | Power Through EEC Power Relay |
| 58 | 95 (T/R) | Fuel Injector #1 and #2 Enable |
| 59 | 96 (T/O) | Fuel Injector #3 and #4 Enable |
| 60 | 60 (BK/LG) | Power Ground |

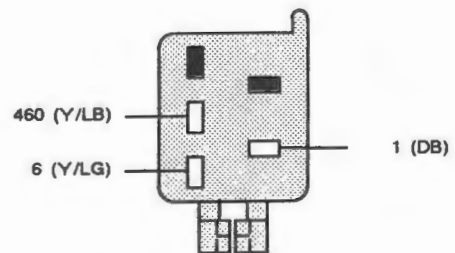
150-7 CONNECTOR FACES/PINOUT CHARTS



FUEL PUMP RELAY

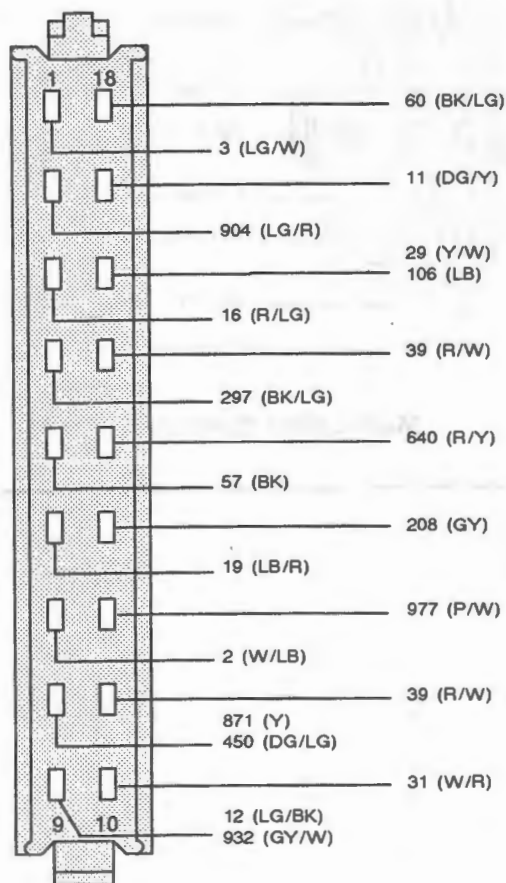


LOW FUEL WARNING MODULE



HORN RELAY

CONNECTOR FACES/PINOUT CHARTS 150-8

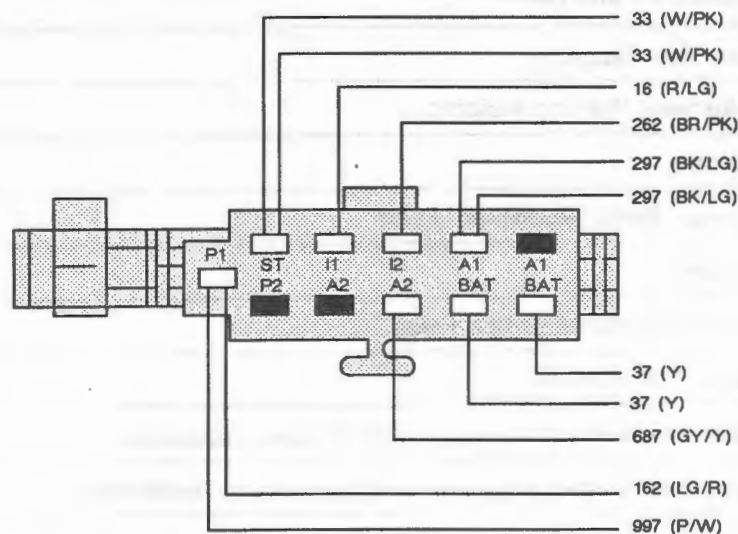


C251

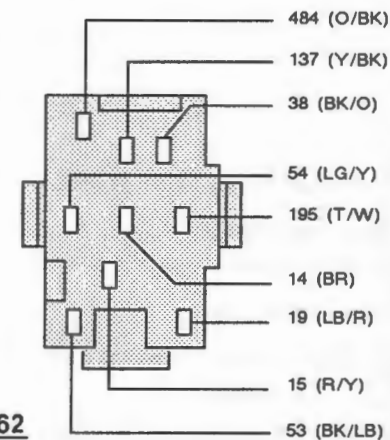
INSTRUMENT CLUSTER

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|---|
| 1 | 3 (LG/W) | Left Turn Indicator |
| 2 | 904 (LG/R) | Alternator Warning Indicator |
| 3 | 16 (R/LG) | Ignition |
| 4 | 297 (BK/LG) | Ignition Switch Accessory Feed |
| 5 | 57 (BK) | Ground |
| 6 | 19 (LB/R) | Instrument Panel Lamps Feed |
| 7 | 2 (W/LB) | Right Turn Indicator |
| 8 | 871 (Y) | Seat Belt Warning Indicator (with Passive Restraints) |
| | 450 (DG/LG) | Seat Belt Warning Indicator (without Passive Restraints) |
| 9 | 12 (LG/BK) | High Beam Indicator (without Daytime Running Lamps) |
| | 932 (GY/W) | High Beam Indicator (with Daytime Running Lamps) |
| 10 | 31 (W/R) | Oil Pressure Indicator |
| 11 | 39 (R/W) | Engine Coolant Temperature Indicator |
| 12 | 977 (P/W) | Brake Warning Indicator |
| 13 | 208 (GY) | Shift Indicator |
| 14 | 640 (R/Y) | Warning Lamps Feed |
| 15 | 39 (R/W) | Engine Coolant Temperature Indicator |
| 16 | 29 (Y/W) | Fuel Gauge Sender To Fuel Gauge |
| | 106 (LB) | Fuel Gauge Sender To Low Fuel Warning Module (with Console) |
| 17 | 11 (DG/Y) | Tachometer |
| 18 | 60 (BK/LG) | Instrument Voltage Regulator To Gauges (with Console) |

150-9 CONNECTOR FACES/PINOUT CHARTS



IGNITION SWITCH

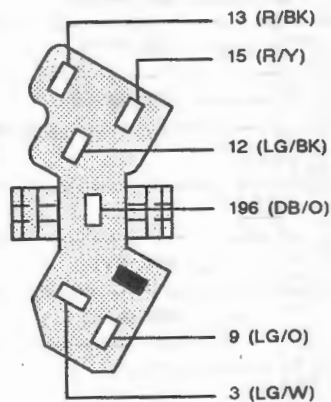


C262

MAIN LIGHT SWITCH

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|---|
| ST | 33 (W/PK) | Clutch Interrupt Switch/Starter Relay |
| | 33 (W/PK) | Backup/Neutral Safety Switch/Starter Relay |
| I1 | 16 (R/LG) | Ignition System Feed (Run) |
| I2 | 262 (BR/PK) | Ignition System Feed (Start) |
| A1 | 297 (BK/LG) | Windshield Wiper/Washer Fuse Feed |
| | 297 (BK/LG) | Instrument Cluster |
| BAT | 37 (Y) | Battery |
| BAT | 37 (Y) | Battery |
| A2 | 687 (GY/Y) | Electronic Engine Control, A/C Heater Control, Engine Cooling fan |
| P1 | 162 (LG/R) | Park Brake Indicator |
| | 977 (P/W) | Dual Brake Warning Switch Indicator |

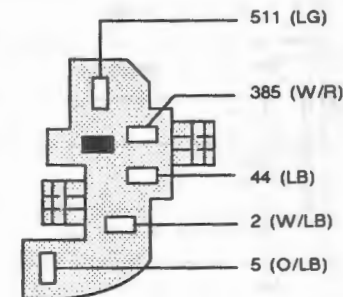
CONNECTOR FACES/PINOUT CHARTS 150-10



C268

MULTI-FUNCTION SWITCH (TURN SIGNAL)

| CIRCUIT | CIRCUIT FUNCTION |
|------------|------------------------------|
| 13 (R/BK) | Low Beam |
| 15 (R/Y) | Dimmer Switch Feed |
| 12 (LG/BK) | High Beam |
| 196 (DB/O) | Flash-to-pass Power Feed |
| — | NOT USED |
| 9 (LG/O) | Left Rear Turn Lamp |
| 3 (LG/W) | Left Turn Indicator And Lamp |

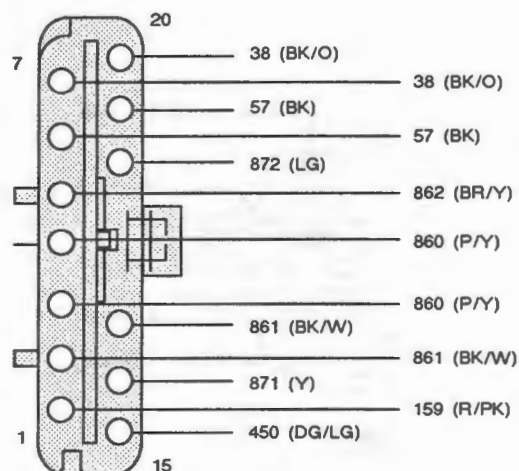


C269

**MULTI-FUNCTION SWITCH
(TURN SIGNAL AND HAZARD)**

| CIRCUIT | CIRCUIT FUNCTION |
|-----------|---|
| 511 (LG) | Left And Right Rear/High Mount Stop Lamps |
| 385 (W/R) | Hazard Flasher Input |
| — | NOT USED |
| 44 (LB) | Turn Signal Flasher Input |
| 2 (W/LB) | Right Turn Indicator And Lamp |
| 5 (O/LB) | Right Rear Turn Lamp |

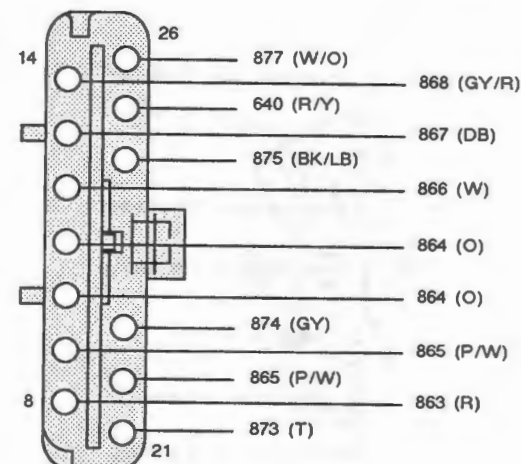
150-11 CONNECTOR FACES/PINOUT CHARTS



C278

PASSIVE RESTRAINT MODULE

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|-----------------------------|
| 1 | 159 (R/PK) | Lamps ON/KEY Warning Buzzer |
| 2 | 861 (BK/W) | Left Rear Motor |
| 3 | 860 (P/Y) | Left Rear Motor |
| 4 | 860 (P/Y) | Left Rear Motor |
| 5 | 862 (BR/Y) | Left Front Limit Switch |
| 6 | 57 (BK) | Ground |
| 7 | 38 (BK/O) | Battery |
| 15 | 450 (DG/LG) | Seat Belt Timer Buzzer |
| 16 | 871 (Y) | Fasten Belts Indicator Feed |
| 17 | 861 (BK/W) | Left Rear Motor |
| 18 | 872 (LG) | Left Rear Limit Switch |
| 19 | 57 (BK) | Ground |
| 20 | 38 (BK/O) | Battery |

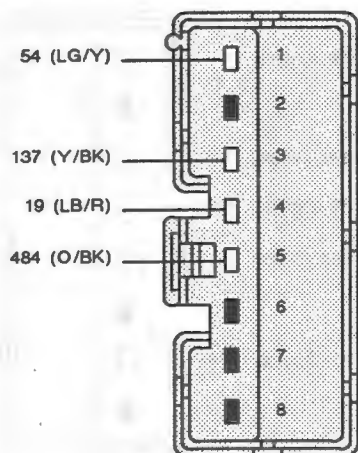


C279

PASSIVE RESTRAINT MODULE

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|-----------------------------------|
| 8 | 863 (R) | Right Door Ajar Switch |
| 9 | 865 (P/W) | Right Rear Motor |
| 10 | 864 (O) | Right Rear Motor |
| 11 | 864 (O) | Right Rear Motor |
| 12 | 866 (W) | Inertia Switch Input |
| 13 | 867 (DB) | Left Door Ajar Switch |
| 14 | 868 (GY/R) | Emergency Release Lever Switches |
| 21 | 873 (T) | Right Rear Limit Switch |
| 22 | 865 (P/W) | Right Rear Motor |
| 23 | 874 (GY) | Right Front Limit Switch |
| 24 | 875 (BK/LB) | Ground |
| 25 | 640 (R/Y) | Run/Start/Door Ajar Input |
| 26 | 877 (W/O) | Emergency Release Lever Indicator |

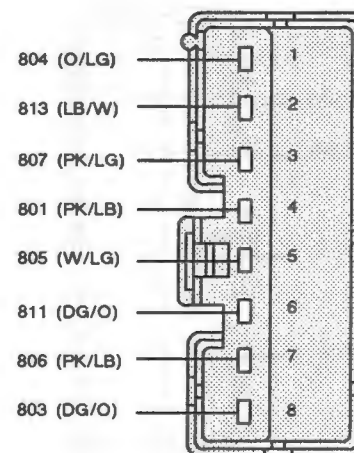
CONNECTOR FACES/PINOUT CHARTS 150-12



C257

RADIO (AM, AM/FM STEREO)

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|------------|--------------------|
| 1 | 54 (LG/Y) | Radio Memory |
| 2 | — | NOT USED |
| 3 | 137 (Y/BK) | 12V Power Feed |
| 4 | 19 (LB/R) | Instrument Dimming |
| 5 | 484 (O/BK) | LCD Dimming |
| 6 | — | NOT USED |
| 7 | — | NOT USED |
| 8 | — | NOT USED |

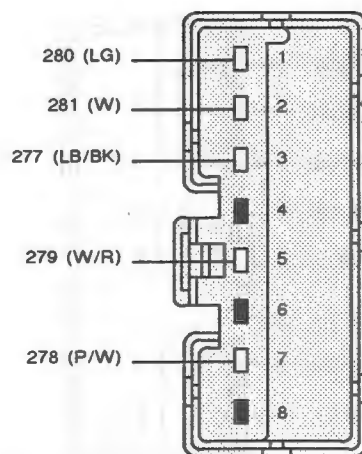


C258

RADIO (AM, AM/FM STEREO)

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|--------------------------------|
| 1 | 804 (O/LG) | Left Front Speaker Signal (+) |
| 2 | 813 (LB/W) | Left Front Speaker Signal (-) |
| 3 | 807 (PK/LG) | Left Rear Speaker Signal (+) |
| 4 | 801 (PK/LB) | Left Rear Speaker Signal (-) |
| 5 | 805 (W/LG) | Right Front Speaker Signal (+) |
| 6 | 811 (DG/O) | Right Front Speaker Signal (-) |
| 7 | 806 (PK/LB) | Right Rear Speaker Signal (+) |
| 8 | 803 (DG/O) | Right Rear Speaker Signal (-) |

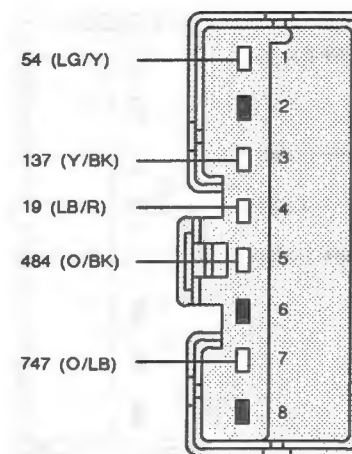
150-13 CONNECTOR FACES/PINOUT CHARTS



C238

RADIO (PREMIUM SOUND)

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|--------------------------------|
| 1 | 280 (LG) | Left Front Speaker Signal (+) |
| 2 | 281 (W) | Amplifier Speaker Signal (-) |
| 3 | 277 (LB/BK) | Left Rear Speaker Signal (+) |
| 4 | — | NOT USED |
| 5 | 279 (W/R) | Right Front Speaker Signal (+) |
| 6 | — | NOT USED |
| 7 | 278 (P/W) | Right Rear Speaker Signal (+) |
| 8 | — | NOT USED |

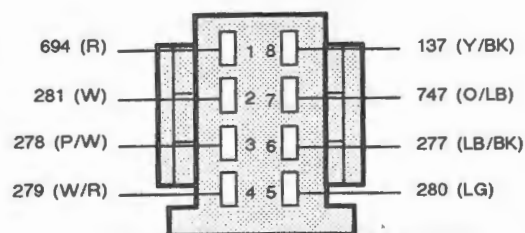


C240

RADIO (PREMIUM SOUND)

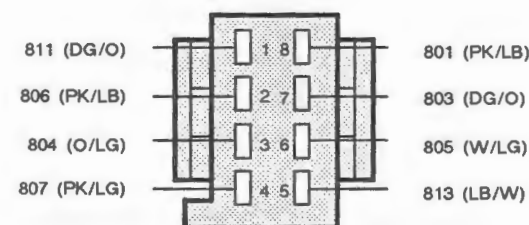
| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|------------|--------------------|
| 1 | 54 (LG/Y) | Radio Memory |
| 2 | — | NOT USED |
| 3 | 137 (Y/BK) | 12V Power feed |
| 4 | 19 (LB/R) | Instrument Dimming |
| 5 | 484 (O/BK) | LCD Dimming |
| 6 | — | NOT USED |
| 7 | 747 (O/LB) | Radio ON Input |
| 8 | — | NOT USED |

CONNECTOR FACES/PINOUT CHARTS 150-14



C453

PREMIUM RADIO AMPLIFIER (INPUT)



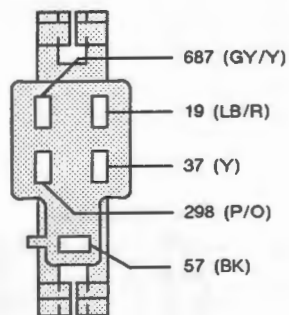
C454

PREMIUM RADIO AMPLIFIER (OUTPUT)

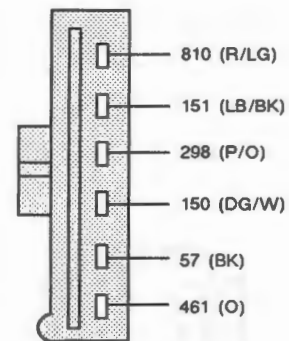
| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|-------------------------------------|
| 1 | 694 (R) | Ground |
| 2 | 281 (W) | Signal Ground |
| 3 | 278 (P/W) | Right Rear Speaker Signal (+) |
| 4 | 279 (W/R) | Right Front Door Speaker Signal (+) |
| 5 | 280 (LG) | Left Front Door Speaker Signal (+) |
| 6 | 277 (LB/BK) | Left Rear Speaker Signal (+) |
| 7 | 747 (O/LB) | Radio On Input |
| 8 | 137 (Y/BK) | 12 V Power Feed |

| PIN NUMBER | CIRCUIT | CIRCUIT FUNCTION |
|------------|-------------|-------------------------------------|
| 1 | 811 (DG/O) | Right Front Door Speaker Signal (-) |
| 2 | 806 (PK/LB) | Right Rear Speaker Signal (+) |
| 3 | 804 (O/LG) | Left Front Door Speaker Signal (+) |
| 4 | 807 (PK/LG) | Left Rear Speaker Signal (+) |
| 5 | 813 (LB/W) | Left Front Door Speaker Signal (-) |
| 6 | 805 (W/LG) | Right Front Door Speaker Signal (+) |
| 7 | 803 (DG/O) | Right Rear Speaker Signal (-) |
| 8 | 801 (PK/LB) | Left Rear Speaker Signal (-) |

150-15 CONNECTOR FACES/PINOUT CHARTS

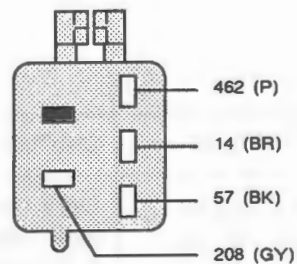


REAR WINDOW DEFROST SWITCH

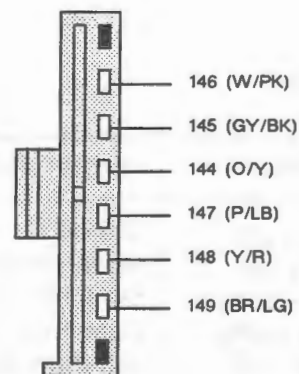


C221

SPEED CONTROL AMPLIFIER



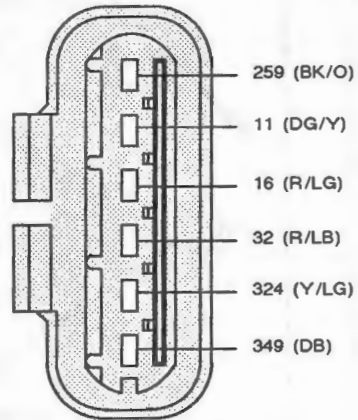
SHIFT INDICATOR DIMMER RELAY



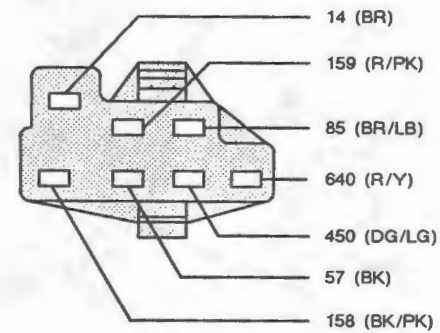
C222

SPEED CONTROL AMPLIFIER

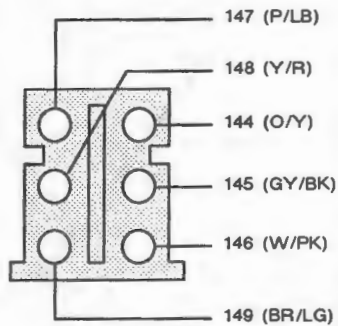
CONNECTOR FACES/PINOUT CHARTS 150-16



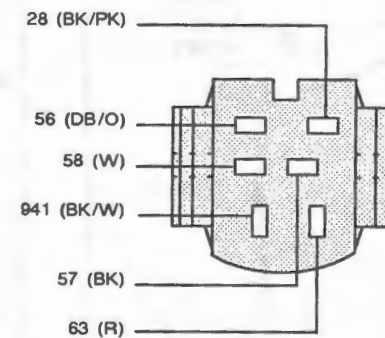
TFI IGNITION MODULE



WARNING CHIME MODULE



SPEED CONTROL SERVO



WINDSHIELD WIPER/WASHER SWITCH

151-1 COMPONENT LOCATION VIEWS

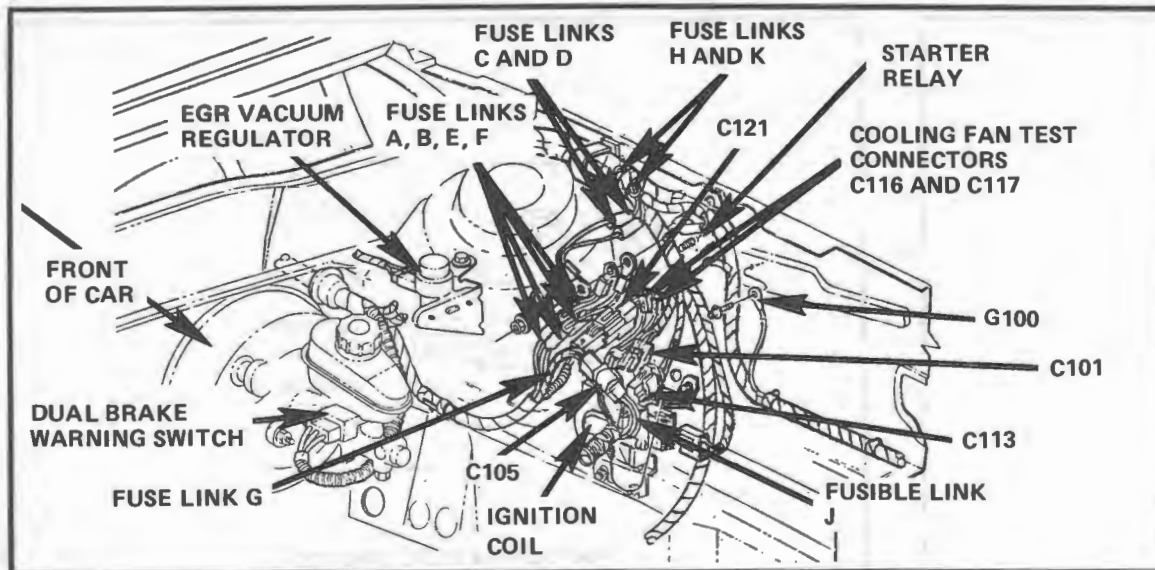


Figure 1 - LH Rear of Engine Compartment

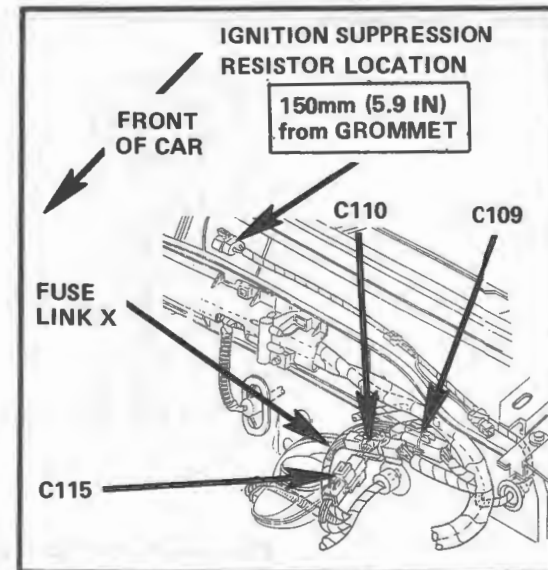


Figure 4 - LH Rear of Engine Compartment

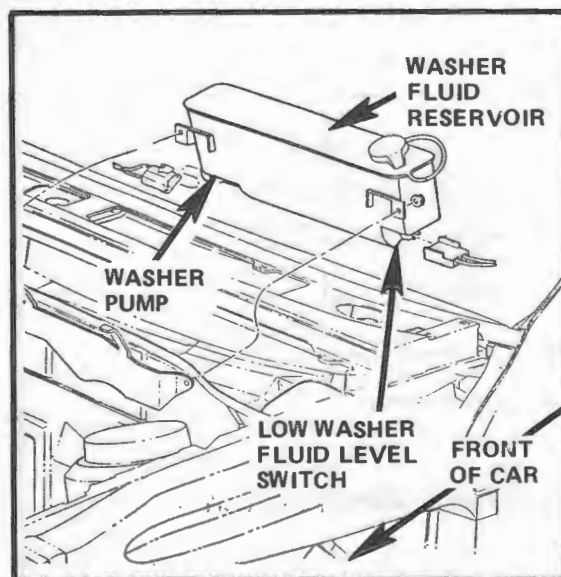


Figure 2 - LH Side of Safety Wall

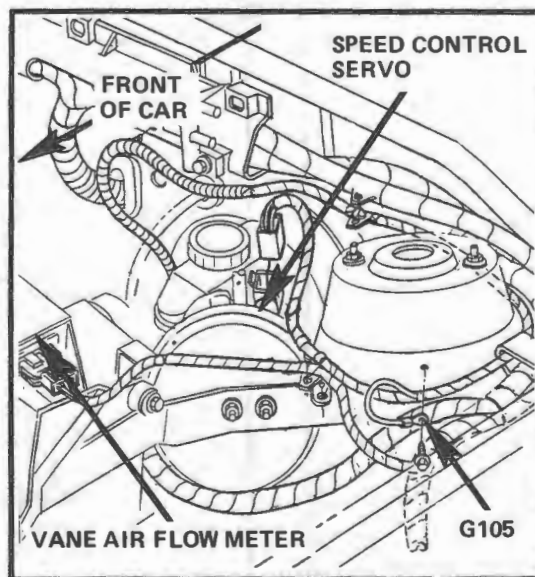


Figure 3 - LH Rear of Engine Compartment

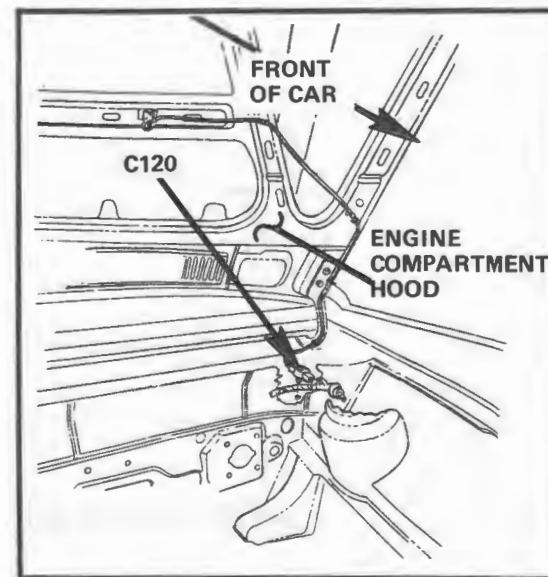


Figure 5 - LH Rear of Engine Compartment

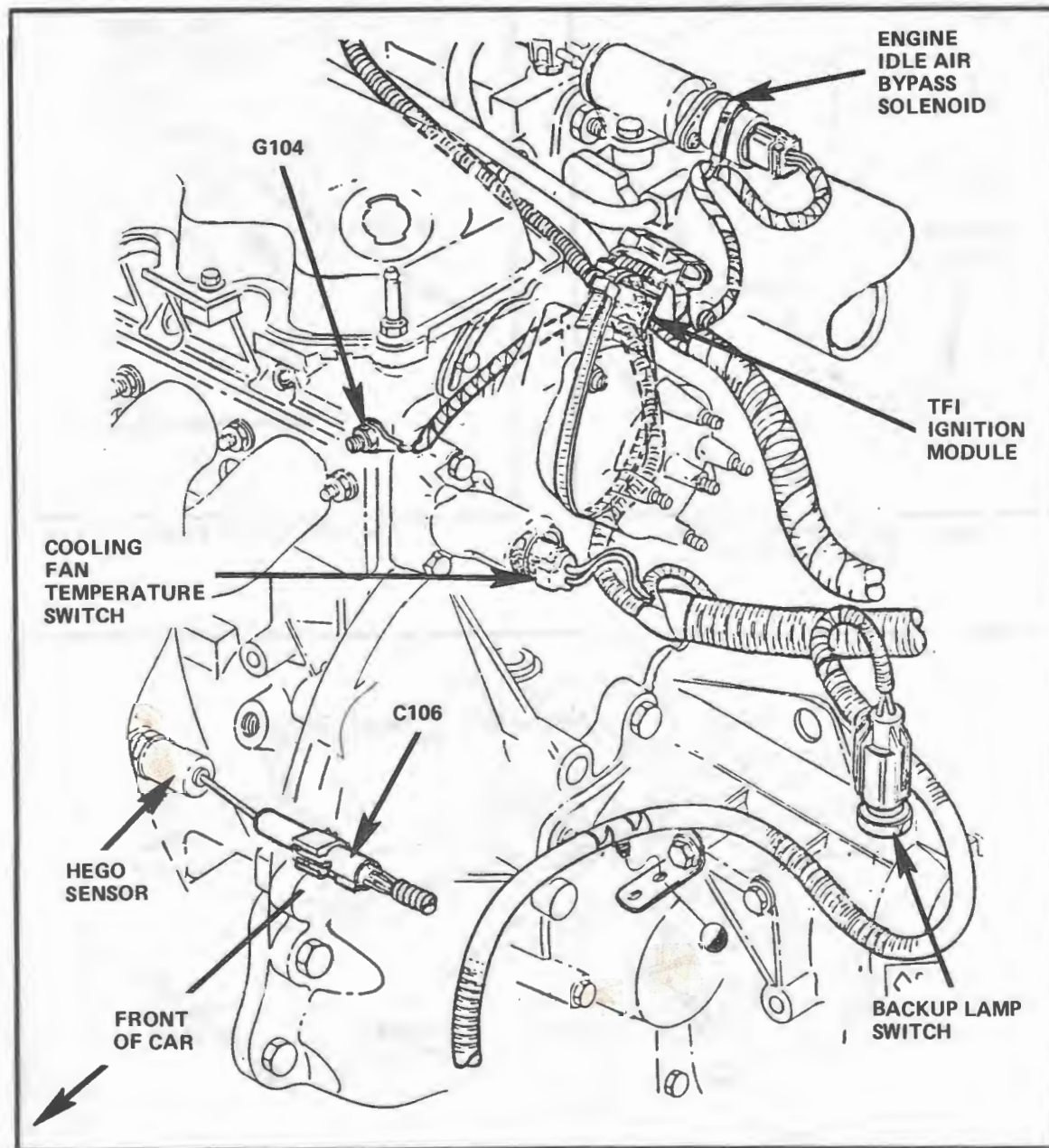


Figure 1 - LH Side of EFI Engine

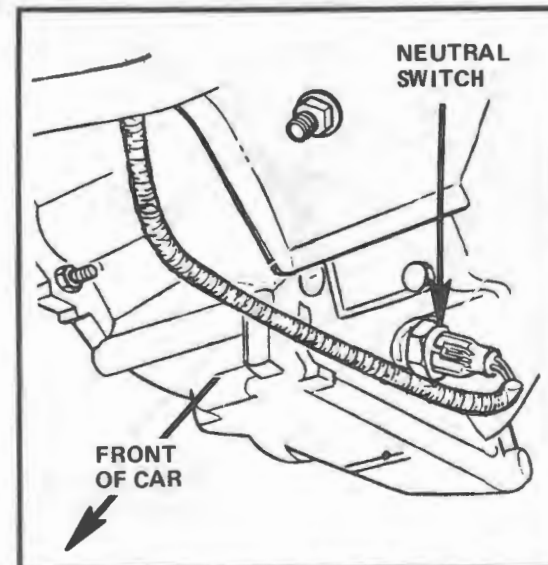


Figure 2 - Lower LH Side of Manual Transaxle

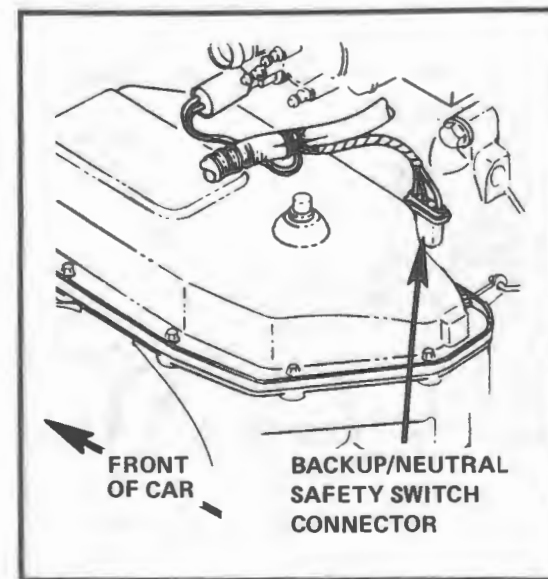


Figure 3 - Rear of Transaxle

151-3 COMPONENT LOCATION VIEWS



Figure 1 - Rear of Transaxle

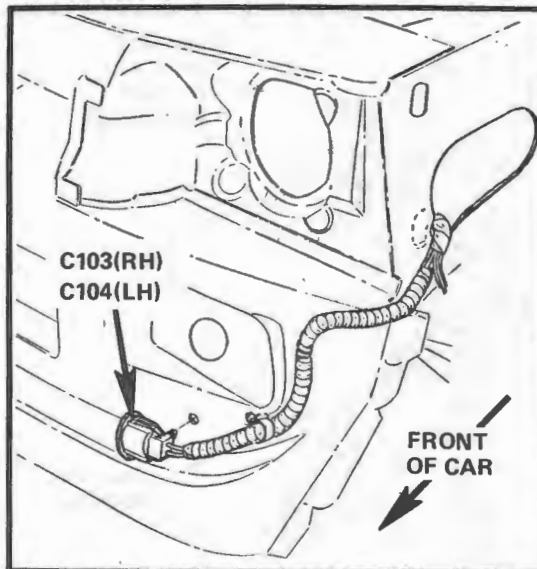


Figure 3 - Behind LH Side of Front Bumper (RH Side Similar)

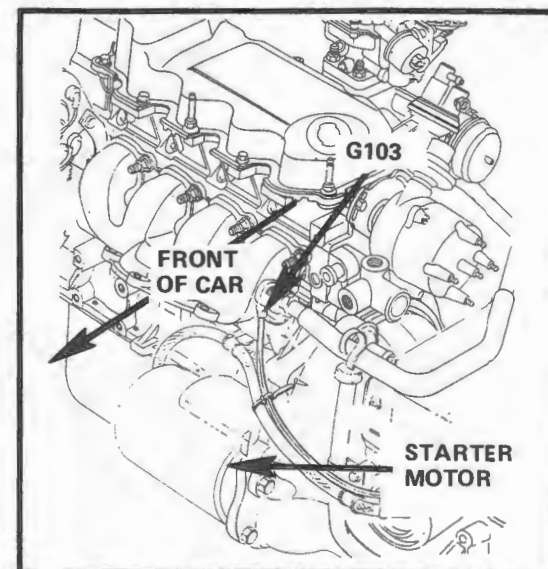


Figure 5 - Front of Engine

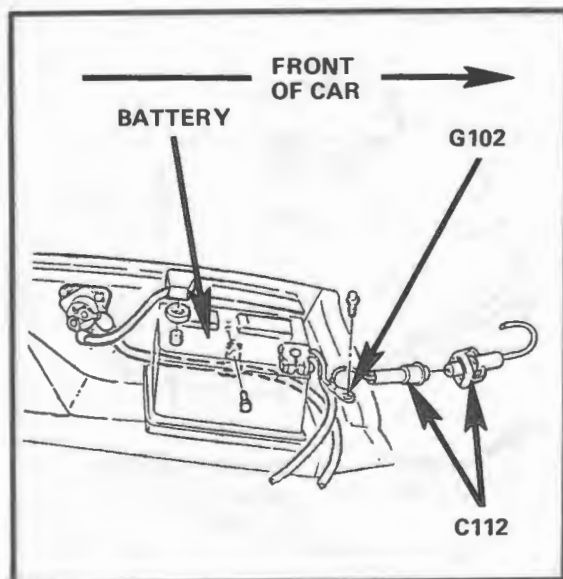


Figure 2 - LH Front of Engine Compartment

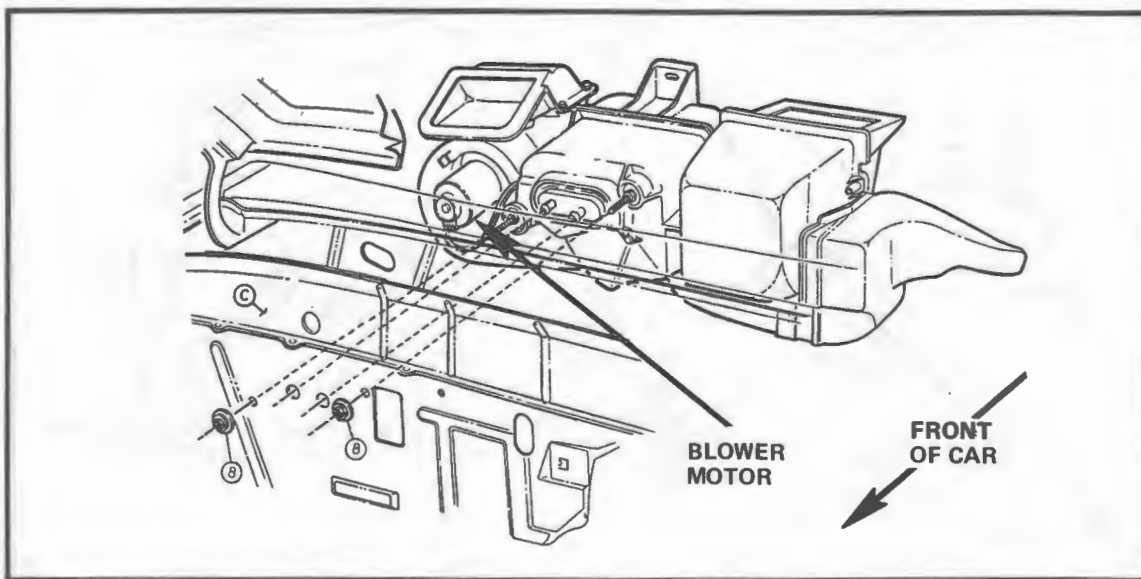


Figure 4 - Behind RH Side of I/P

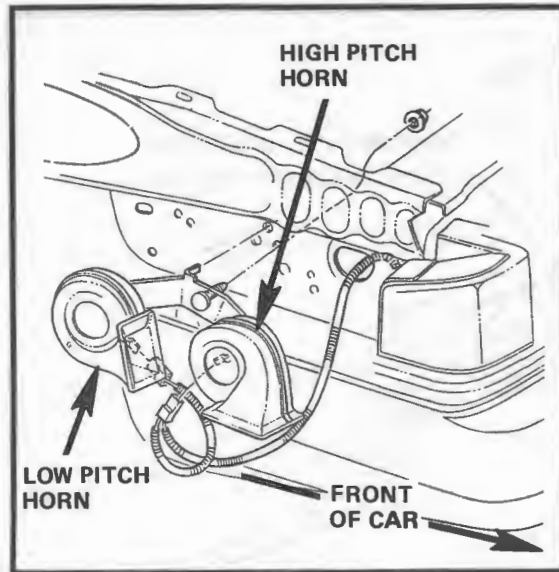


Figure 1 - Inside RH Fender Wall

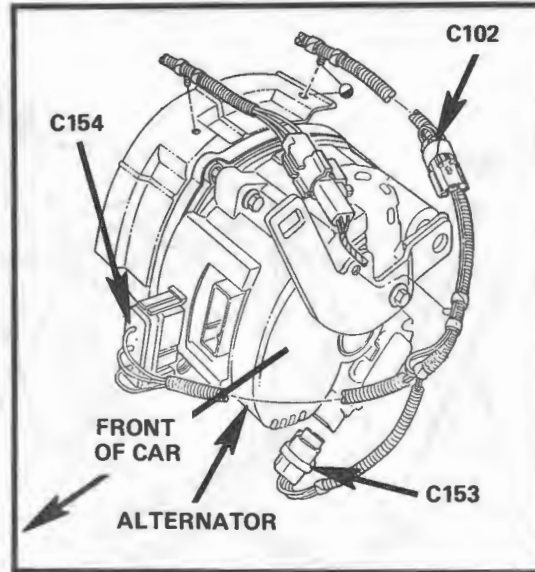


Figure 3 - RH Front of Engine,
On Alternator

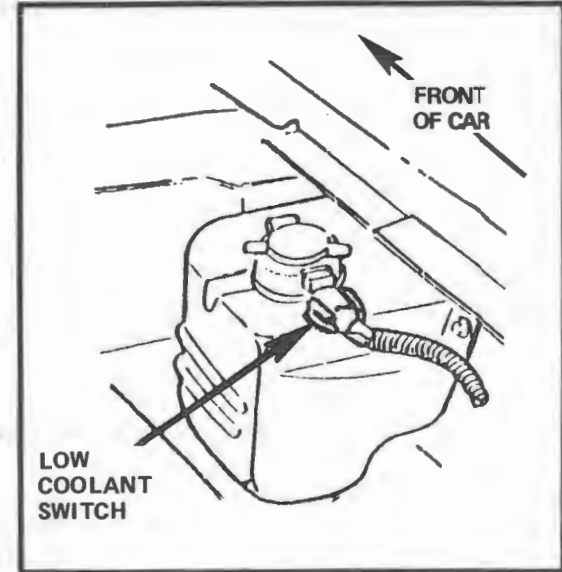


Figure 4 - RH Fender Apron

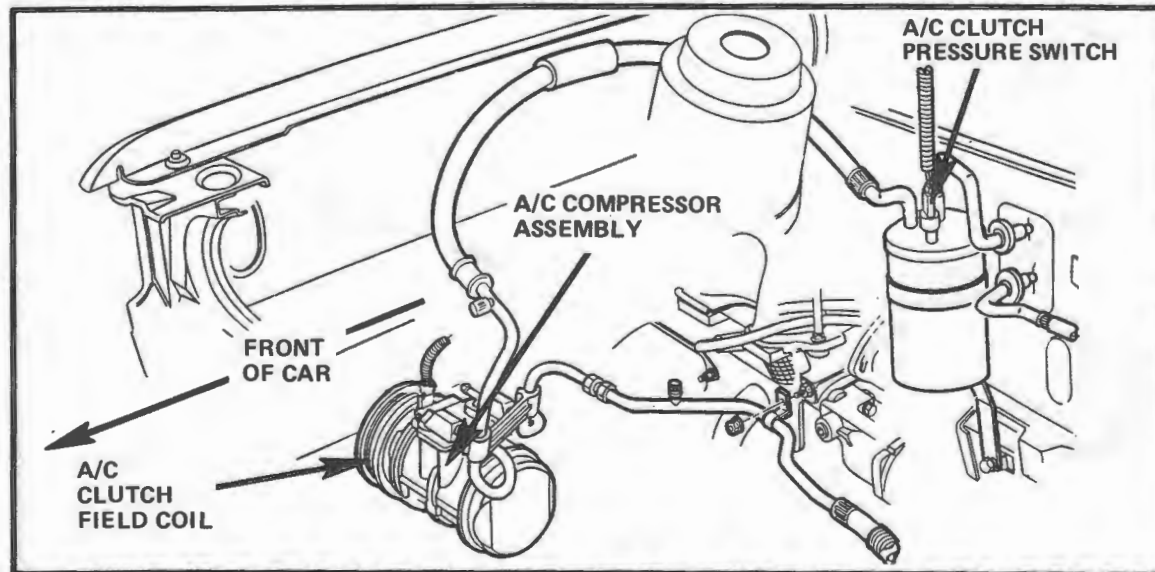


Figure 2 - RH Side of Engine Compartment

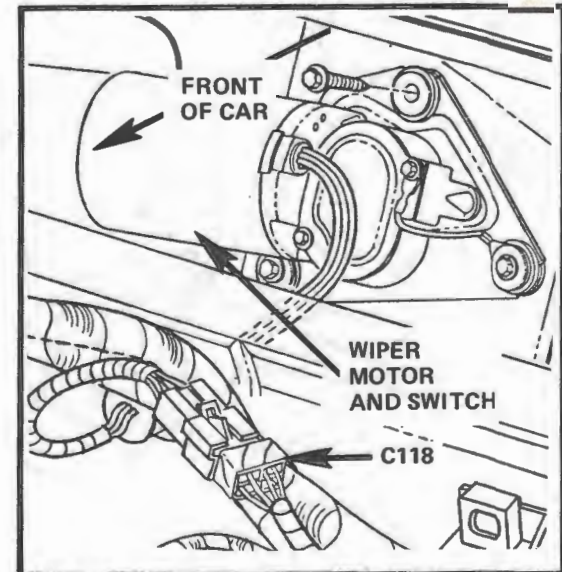


Figure 5 - RH Side of Safety Wall

151-5 COMPONENT LOCATION VIEWS

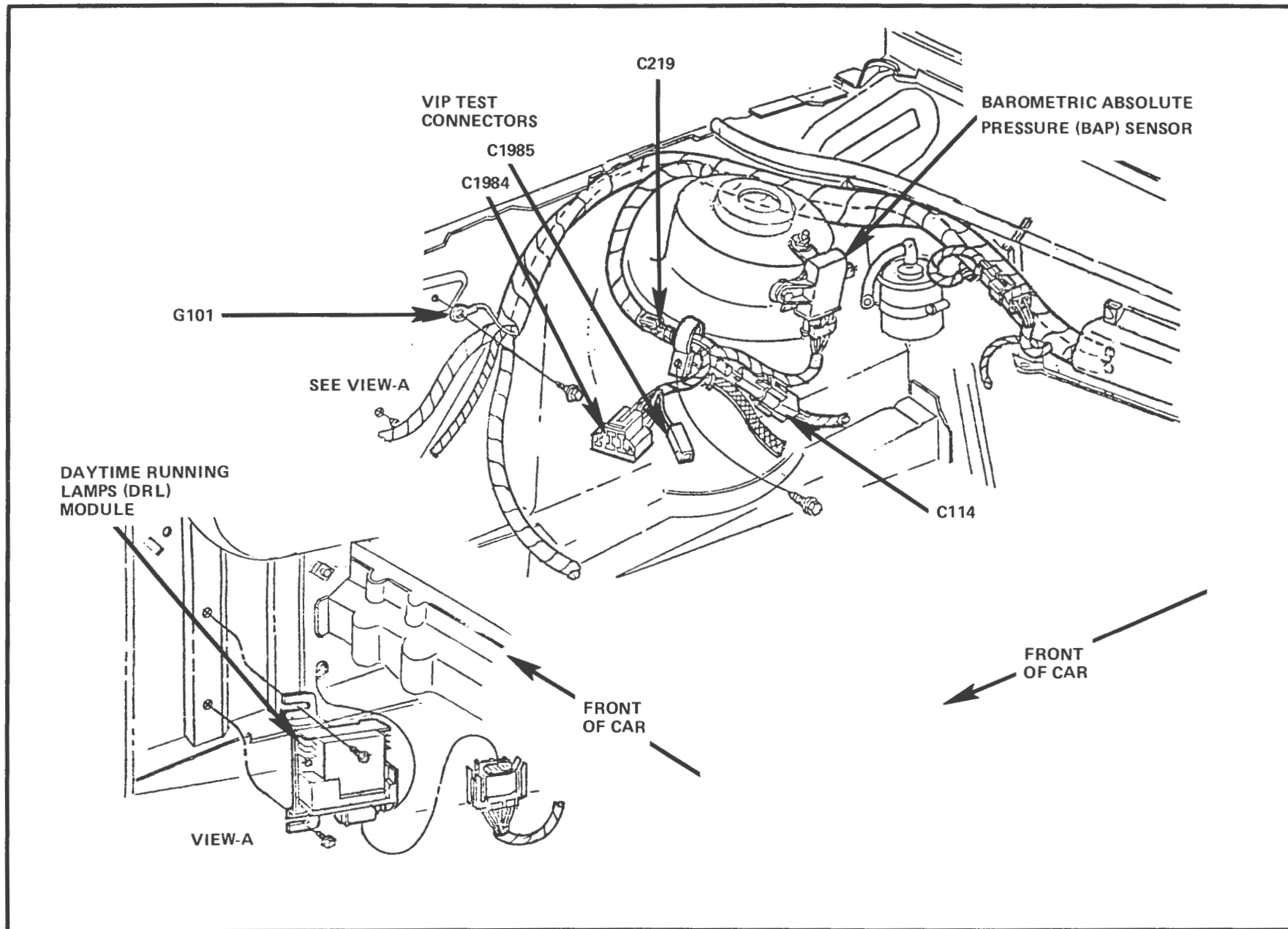


Figure 1 - RH Rear of Engine Compartment (EFI Shown; CFI Similar)

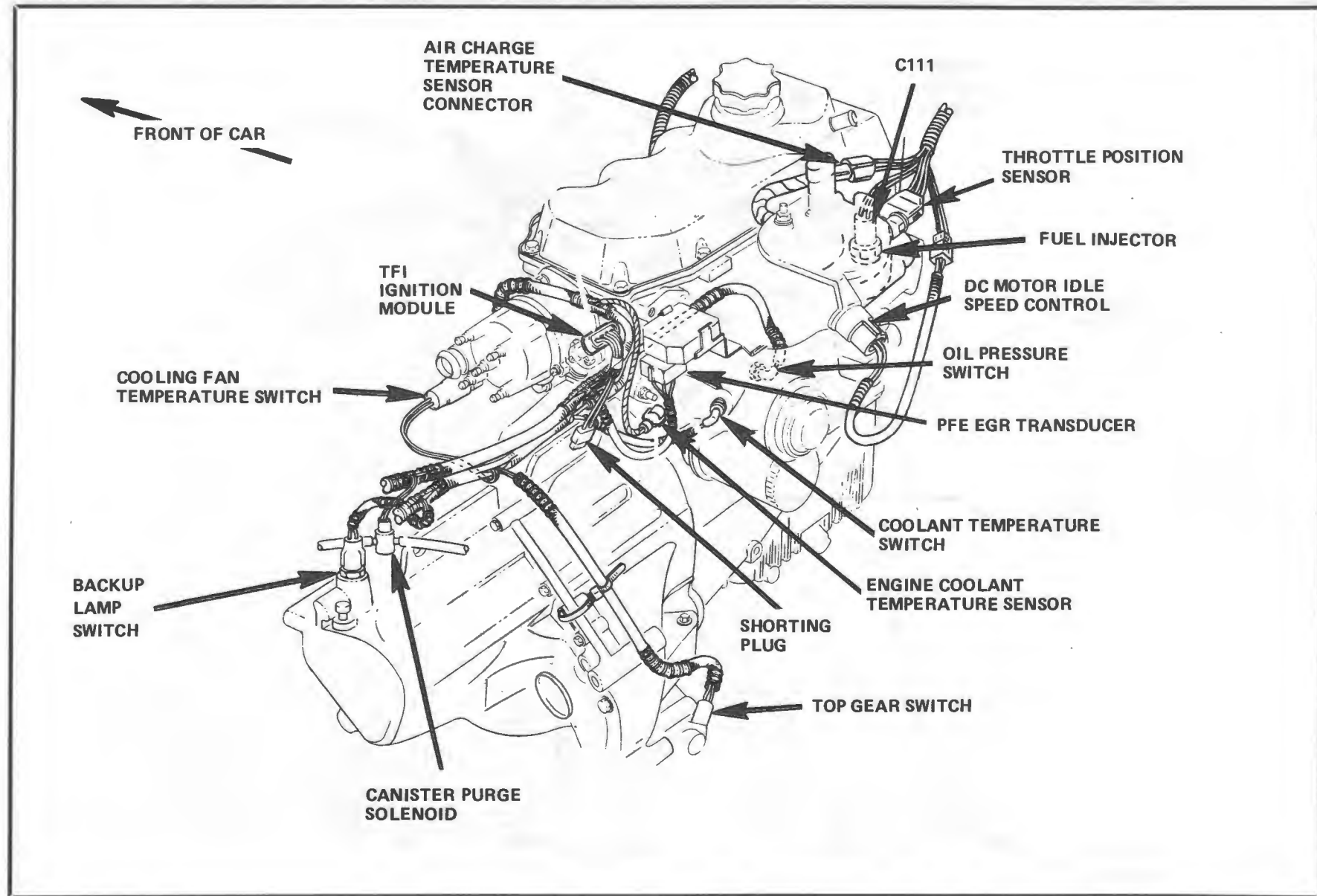


Figure 1 - Rear of CFI Engine

151-7 COMPONENT LOCATION VIEWS

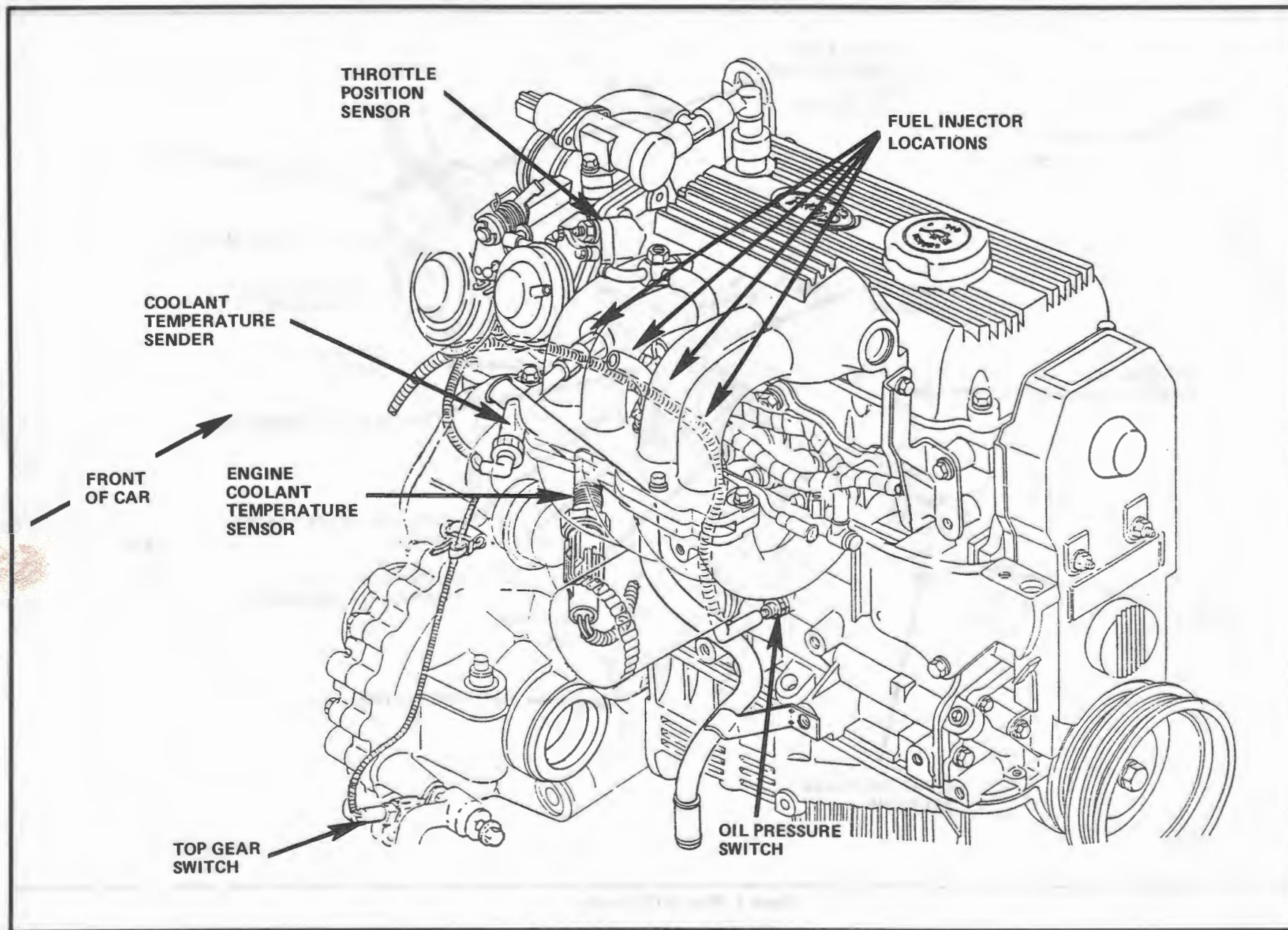


Figure 1 - Rear of 1.9L EFI Engine

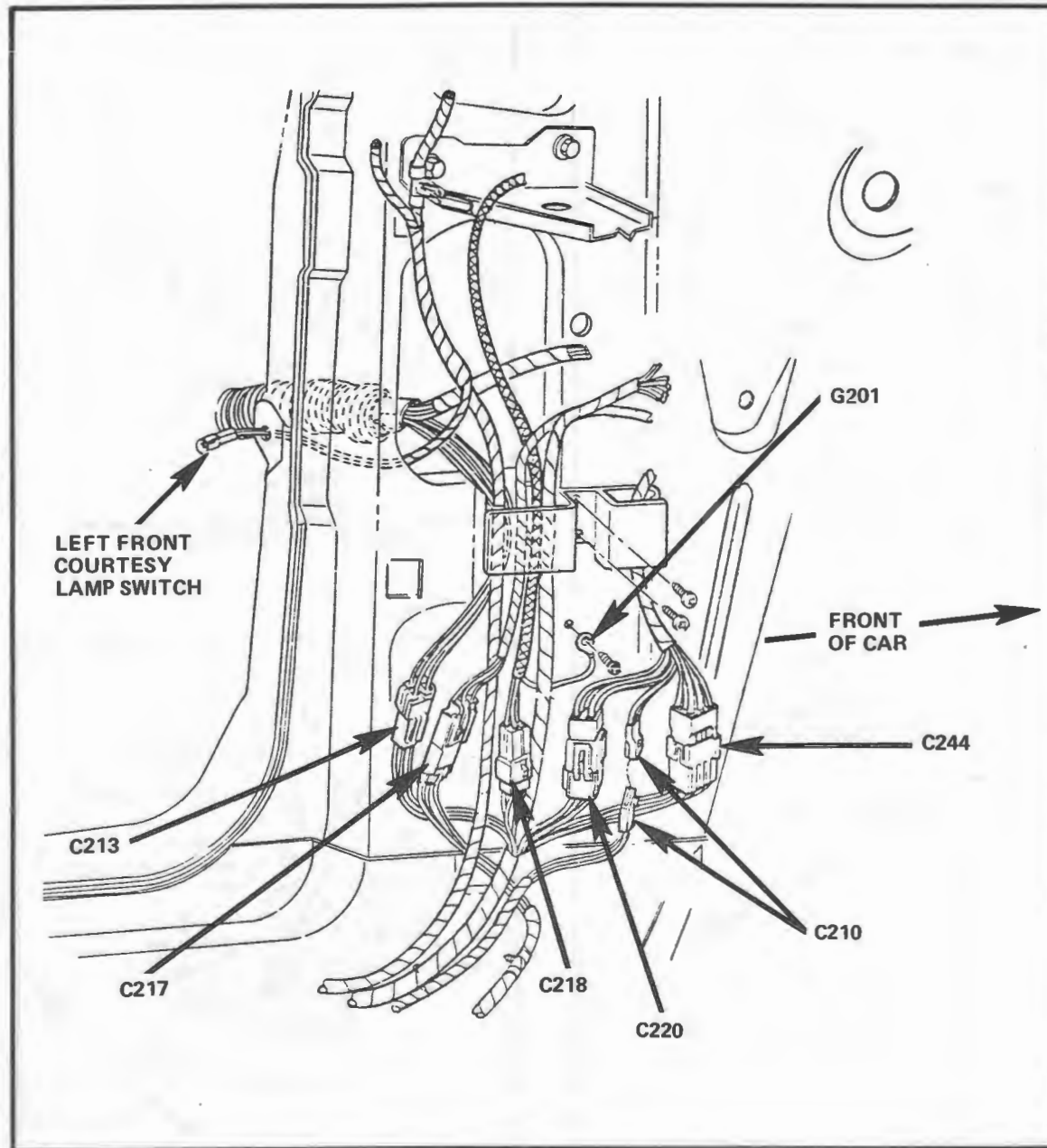


Figure 1 - Behind LH Kick Panel

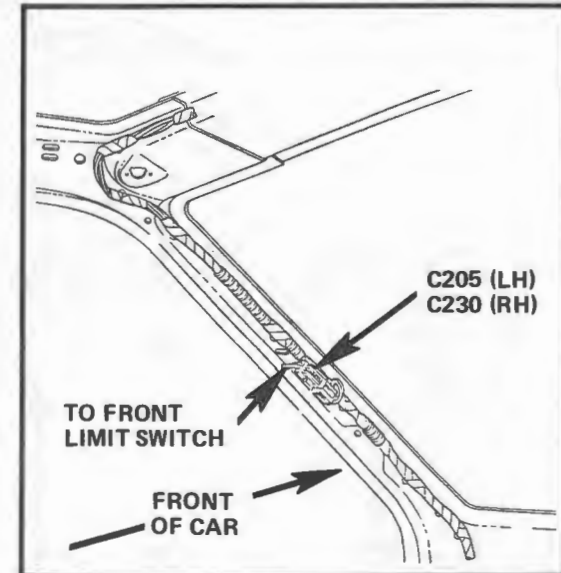


Figure 2 - Inside LH "A" Pillar
(RH Similar)

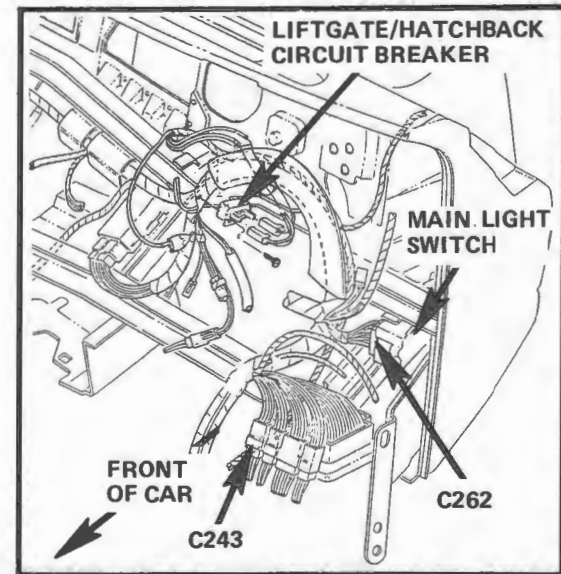


Figure 3 - Behind LH Side of I/P

151-9 COMPONENT LOCATION VIEWS

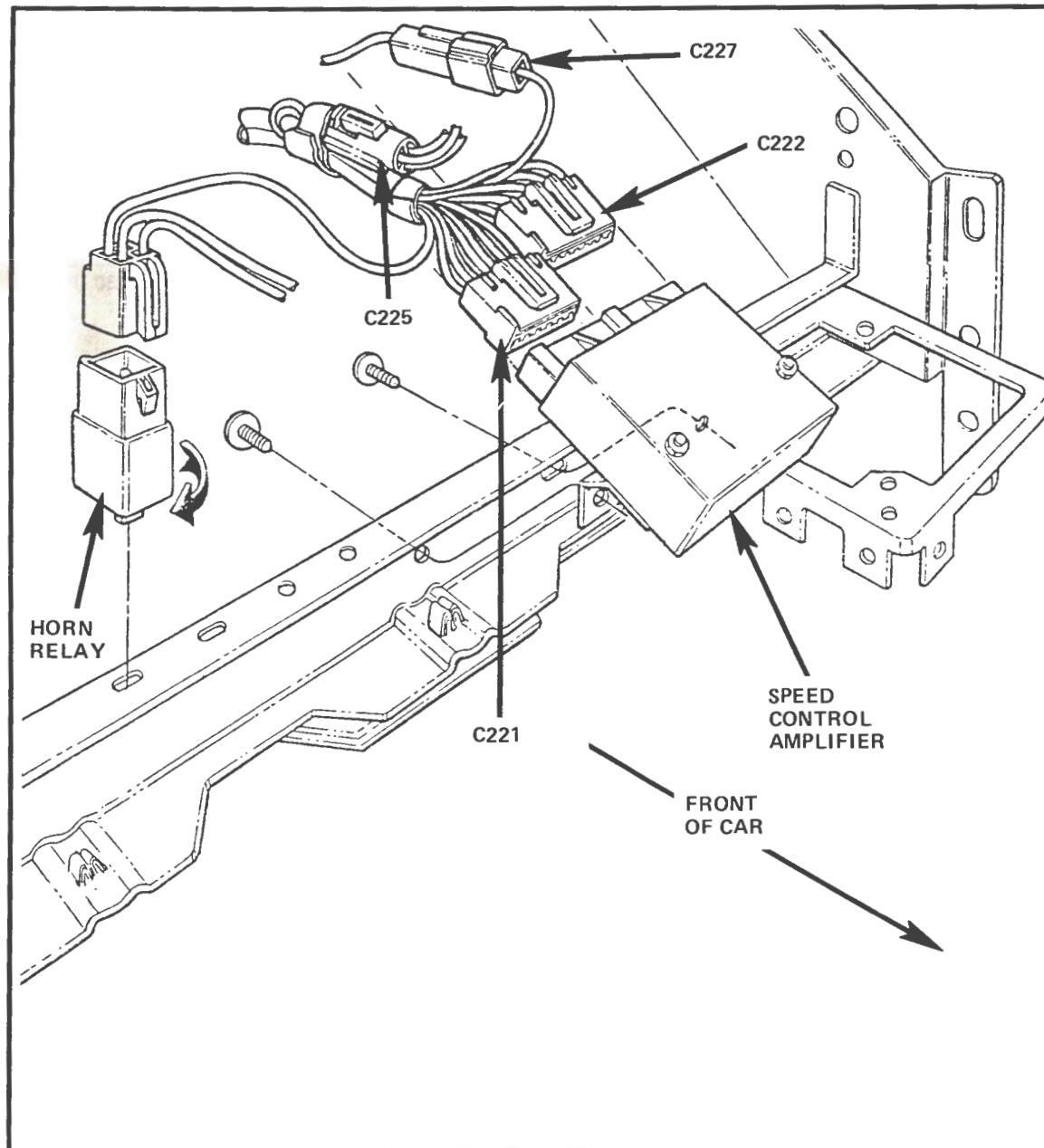


Figure 1 - Behind LH Side of I/P

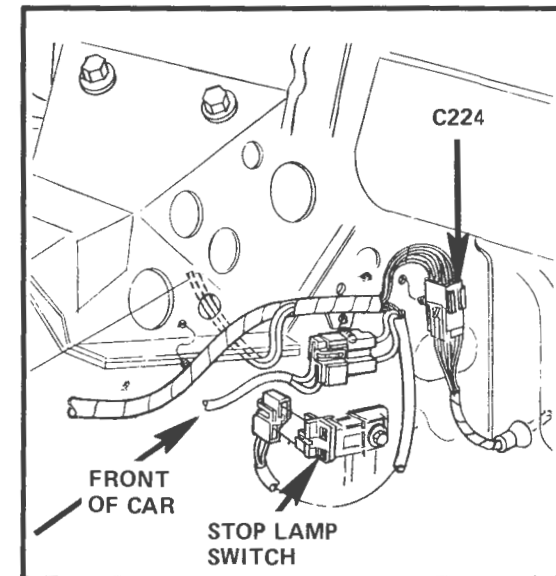


Figure 2 - Behind LH Side of I/P

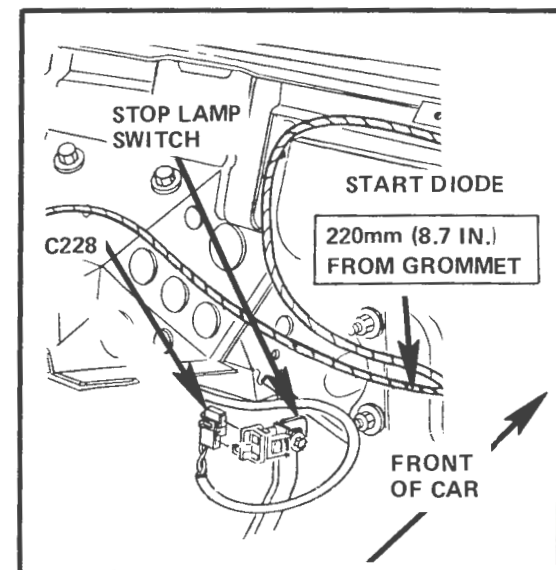


Figure 3 - Behind LH Side of I/P

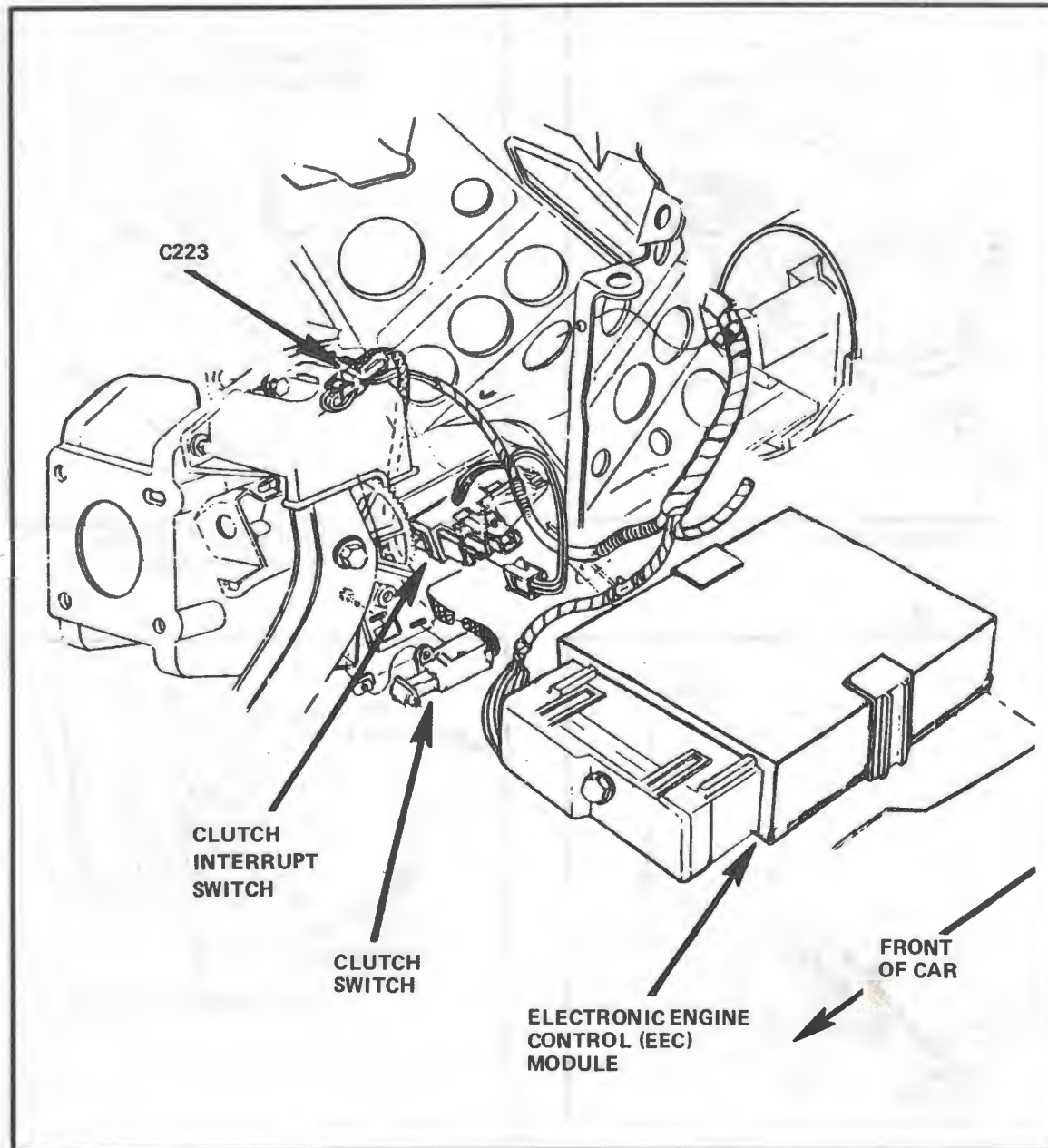


Figure 1 - Behind LH Side of I/P

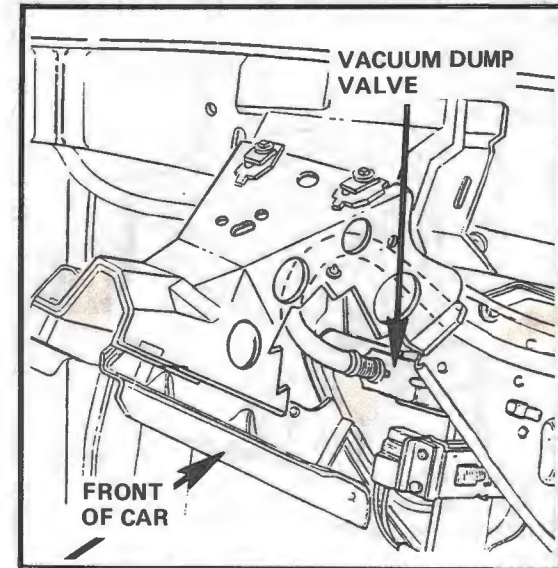


Figure 2 - Behind LH Side of I/P

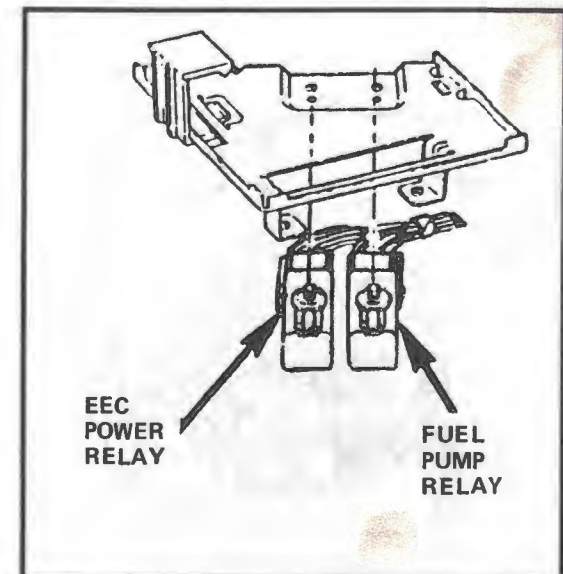


Figure 3 - Behind LH Side of I/P

151-11 COMPONENT LOCATION VIEWS

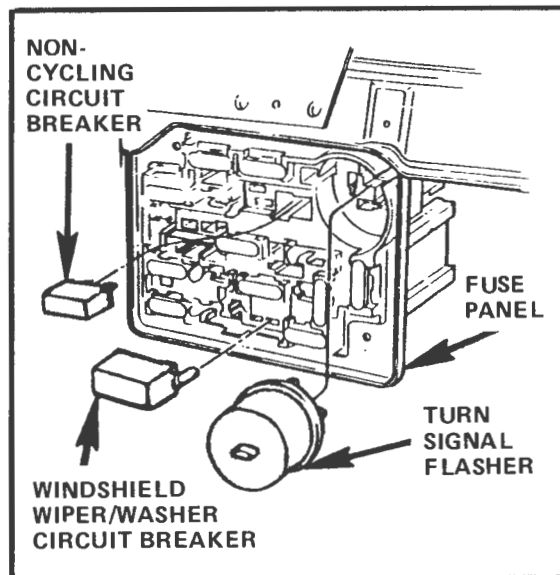


Figure 1 - Behind LH Side of I/P

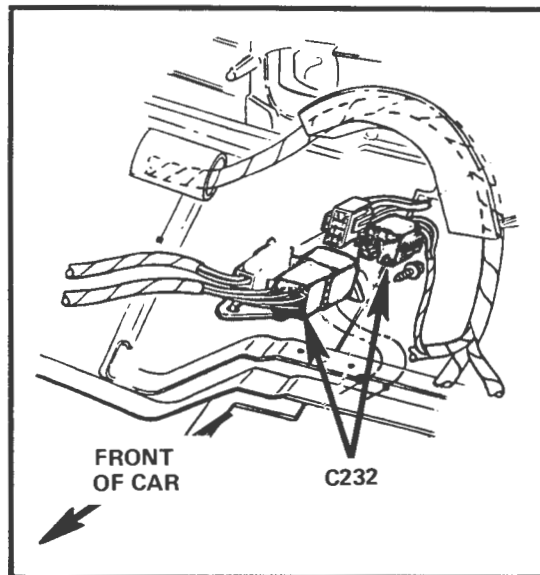


Figure 3 - Behind LH Side of I/P

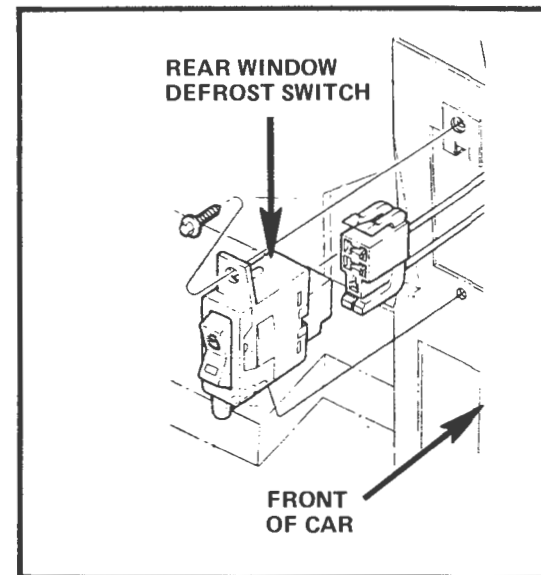


Figure 5 - LH Side of I/P, RH Side of Instrument Cluster

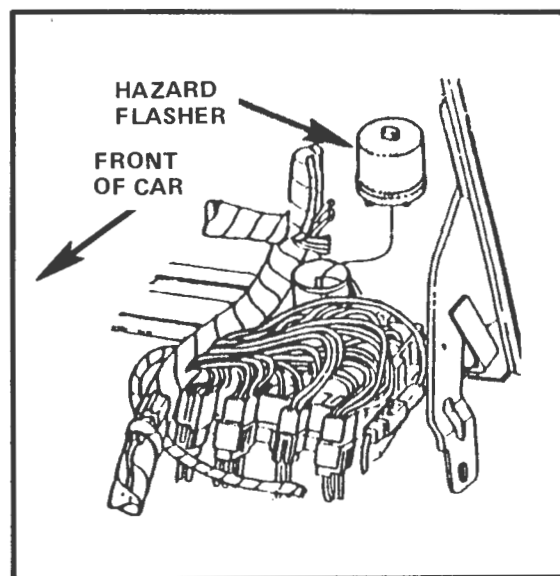


Figure 2 - Behind LH Side of I/P

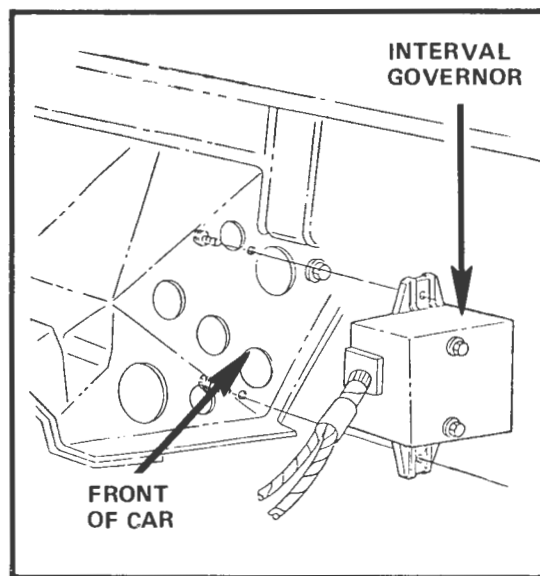


Figure 4 - RH Side of Steering Column Support Bracket

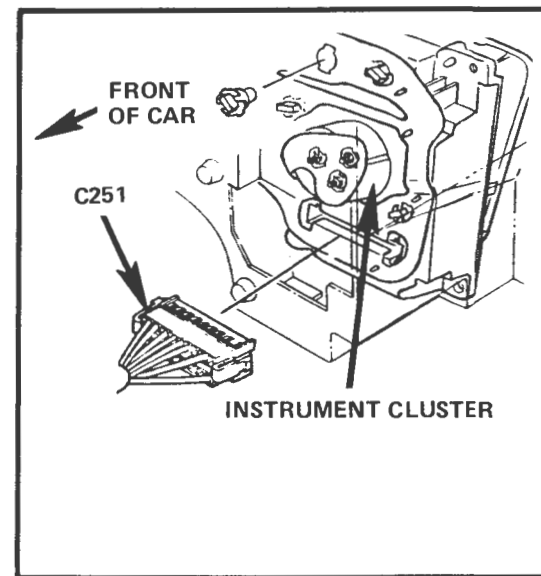


Figure 6 - Rear of Instrument Cluster

COMPONENT LOCATION VIEWS 151-12

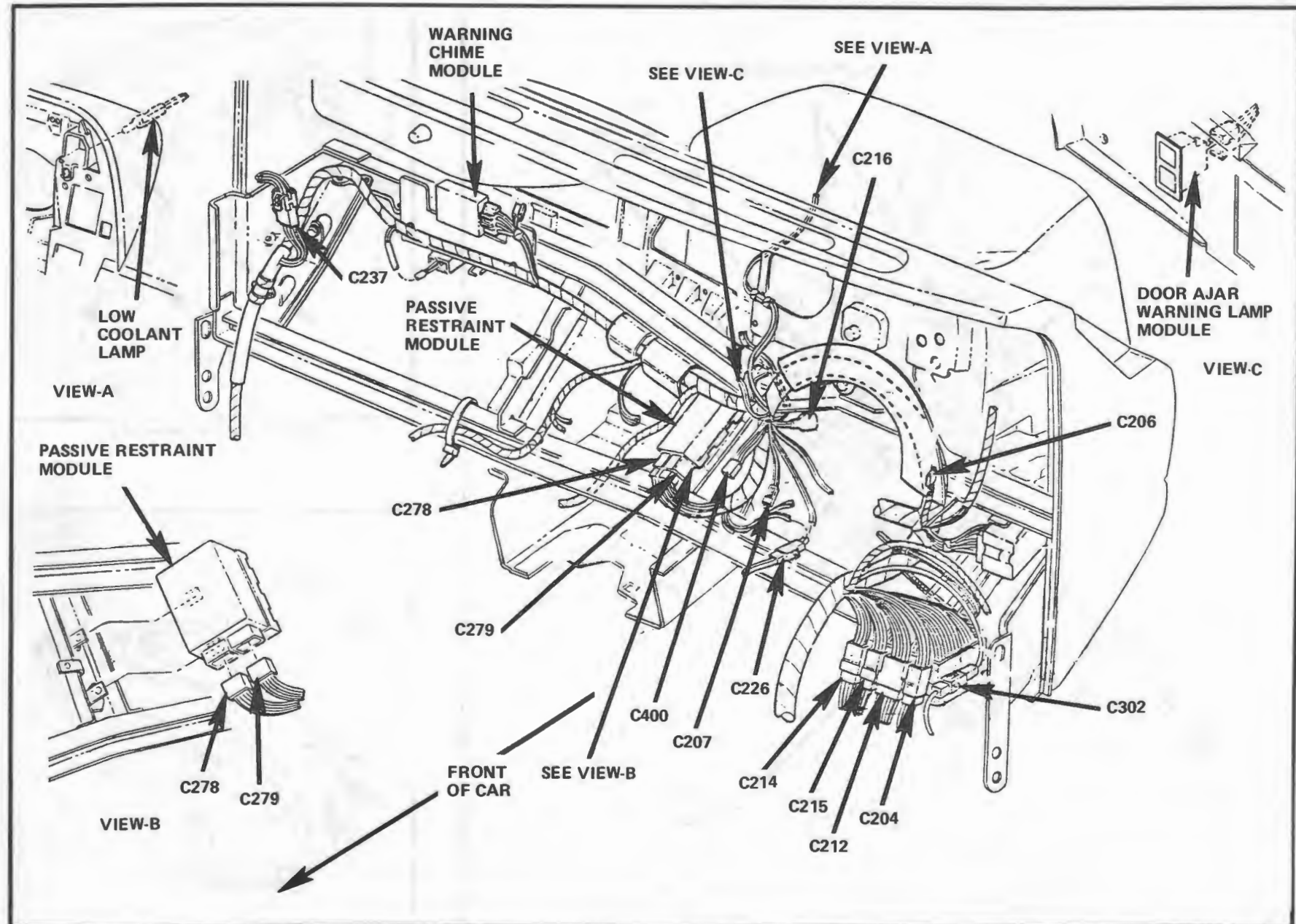


Figure 1 - Behind I/P

151-13 COMPONENT LOCATION VIEWS

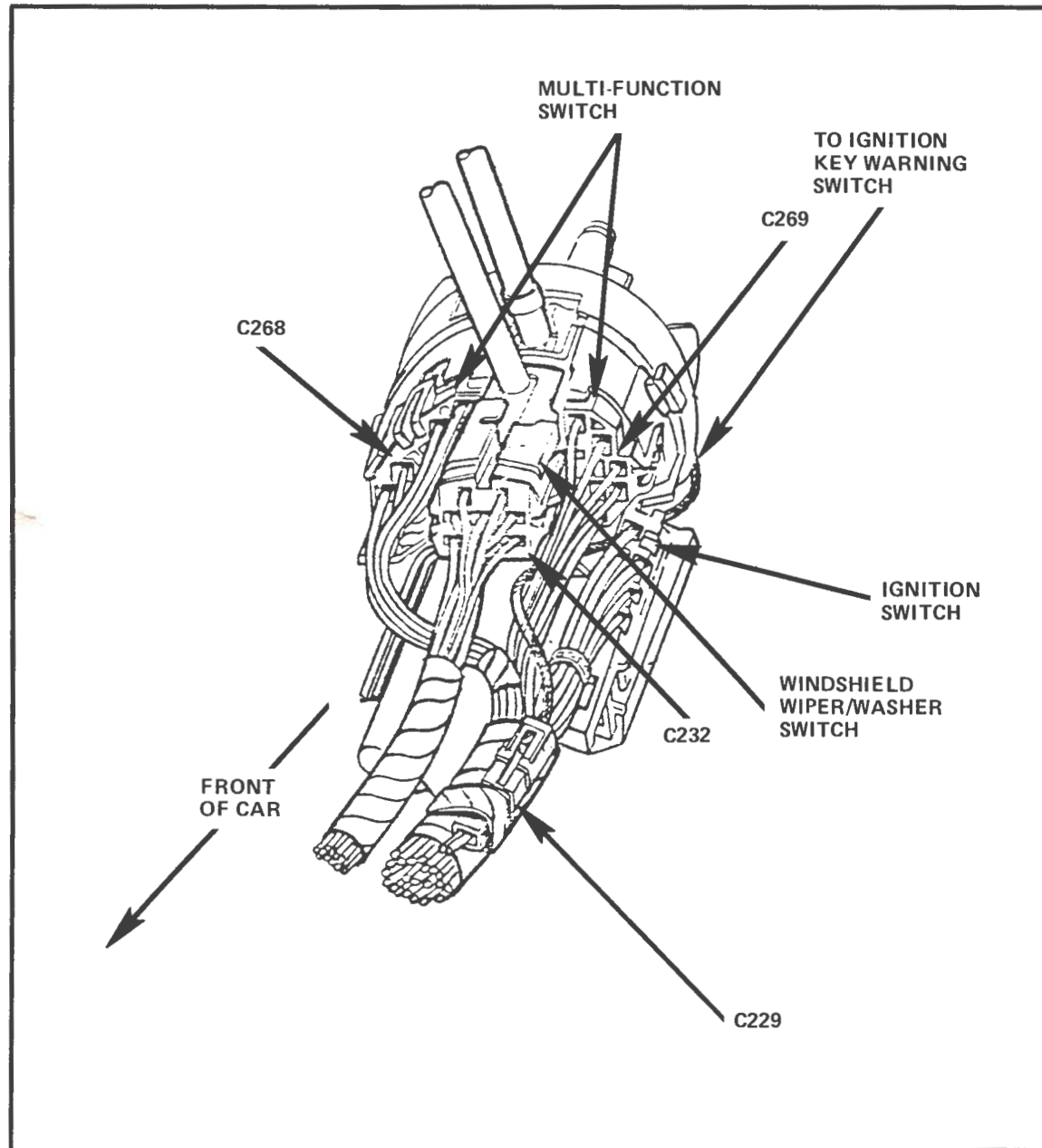


Figure 1 - Top of Steering Column

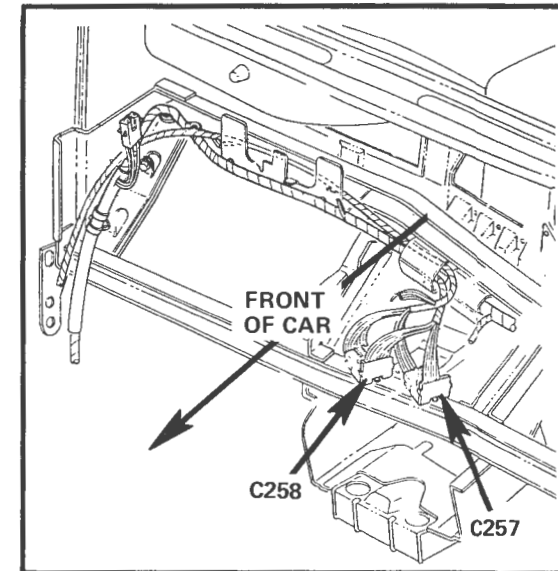


Figure 2 - Behind Center of I/P

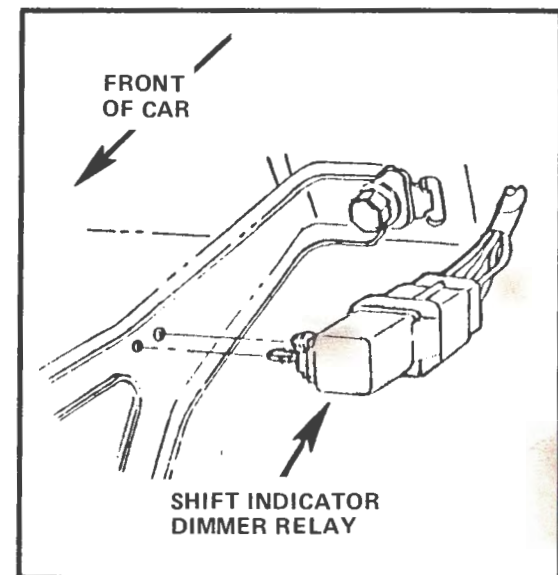


Figure 3 - Behind Center of I/P

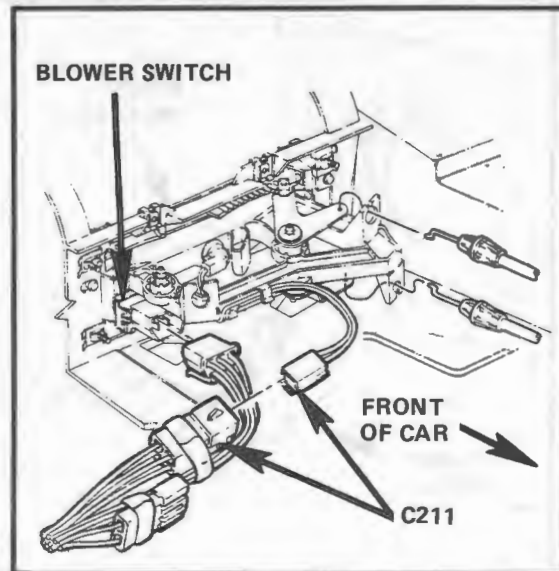


Figure 1 - Behind Center of I/P

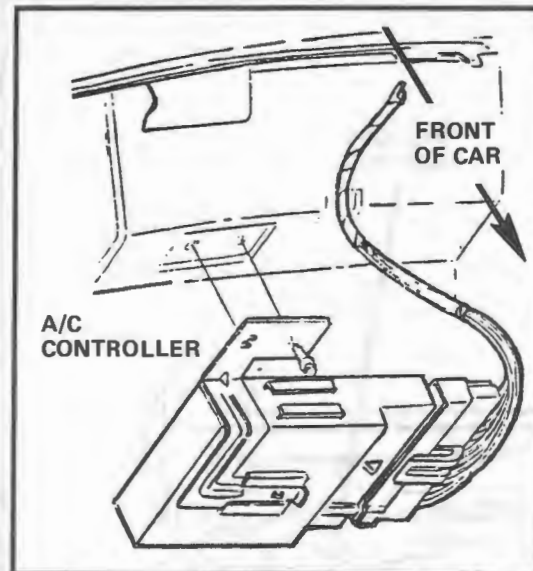


Figure 3 - Behind RH Side of I/P

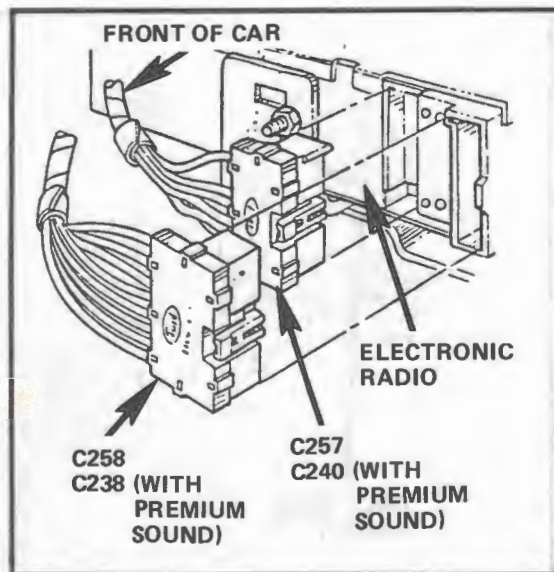


Figure 2 - Behind Center of I/P,
Rear of Electronic Radio

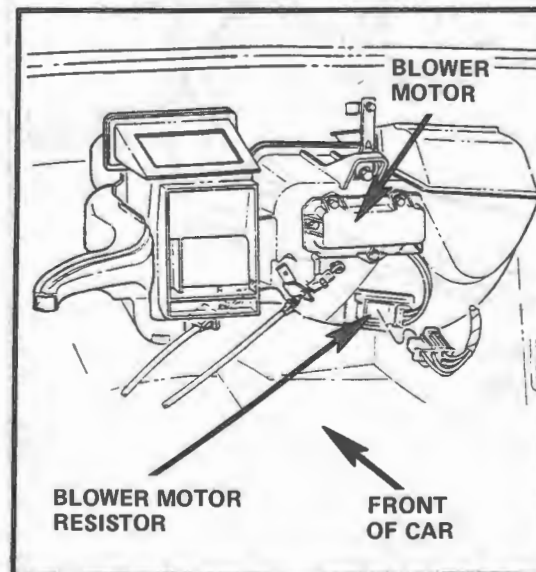


Figure 4 - Behind RH Side of I/P

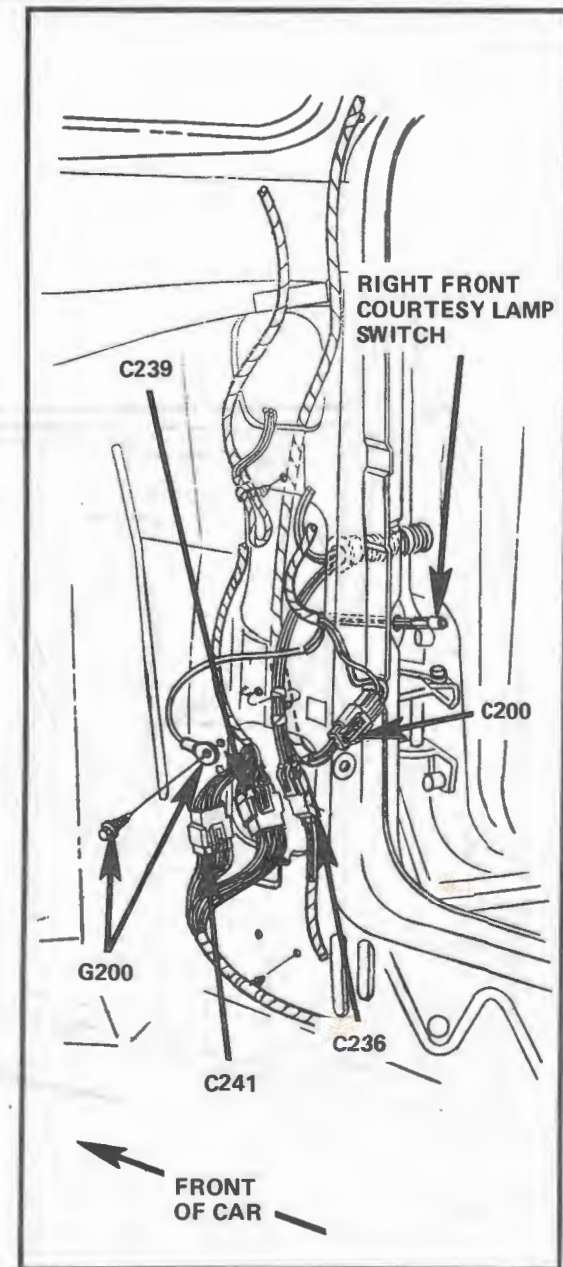


Figure 5 - Behind RH Kick Panel

151-15 COMPONENT LOCATION VIEWS

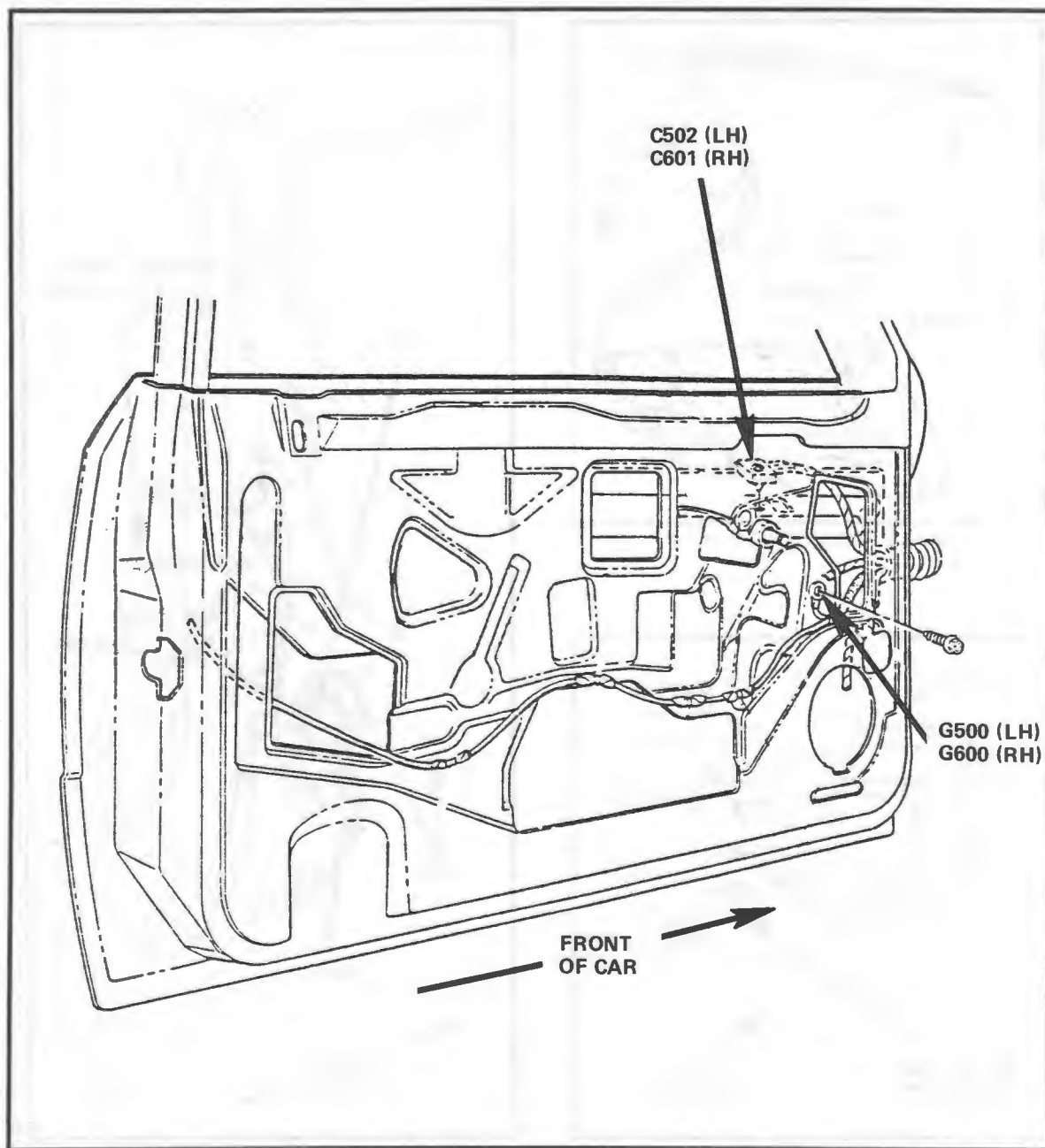


Figure 1 - Inside LH Front Door (RH Similar)

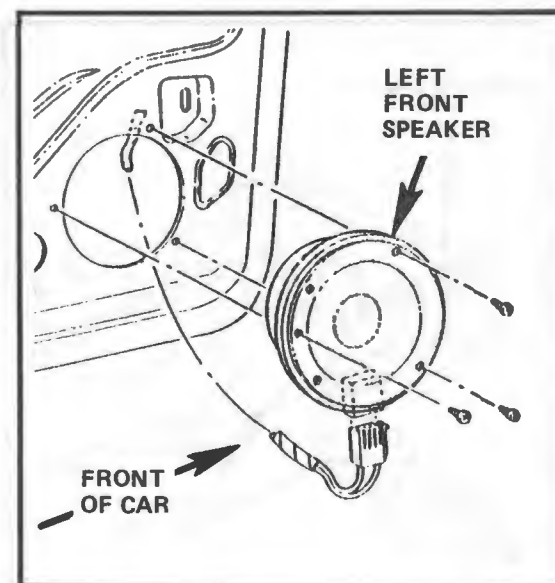


Figure 2 - Front of LH Front Door (RH Similar)



Figure 3 - Top Rear of LH Front Door (RH Similar)

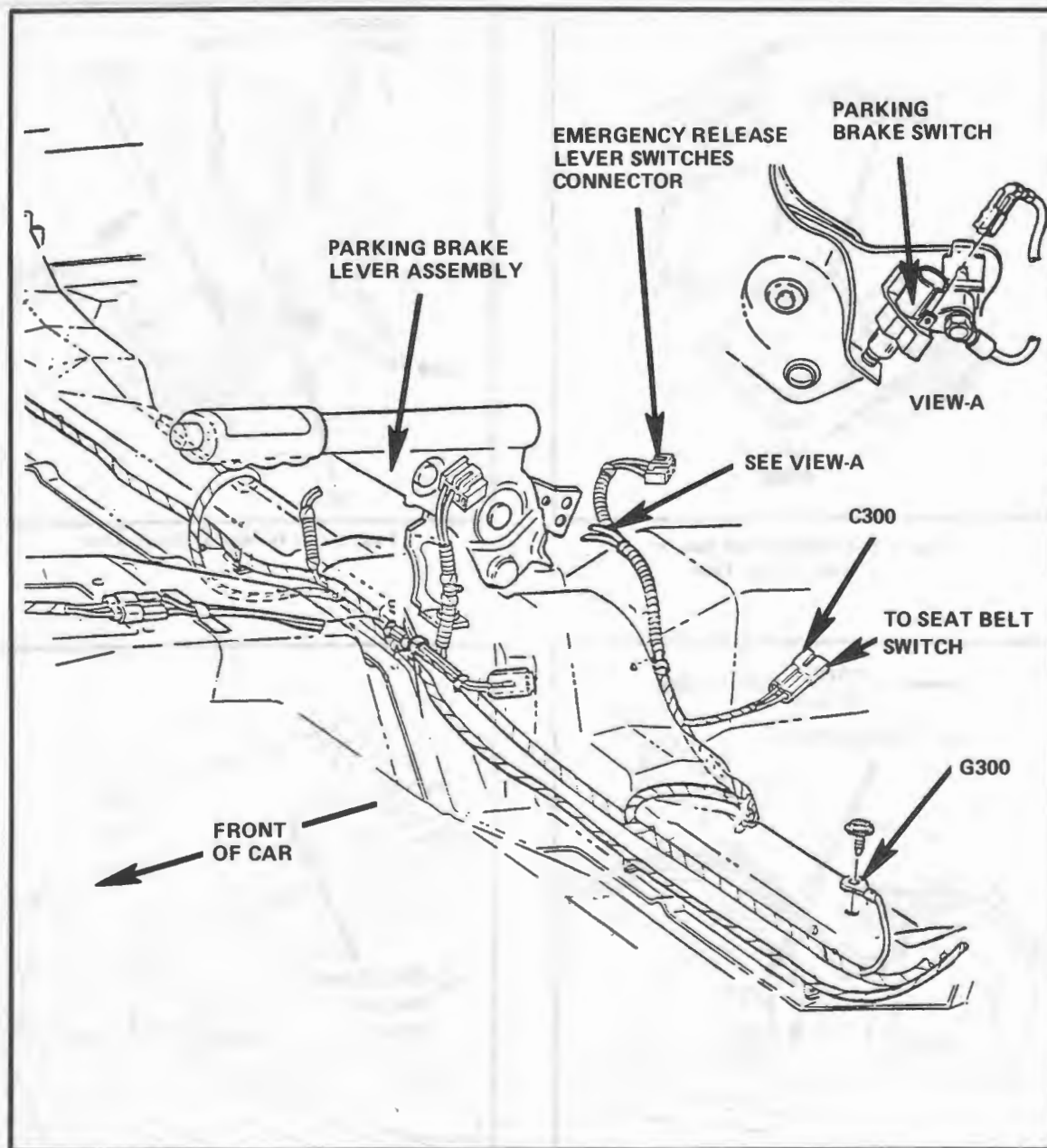


Figure 1 - Below Center Console

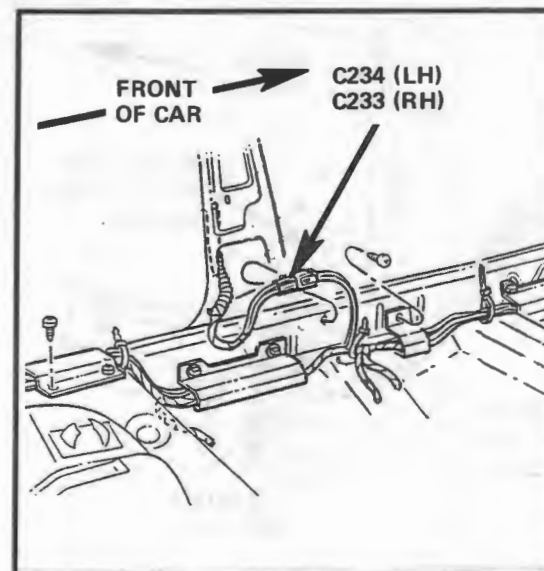


Figure 2 - Base of LH "B" Pillar
(RH Similar)

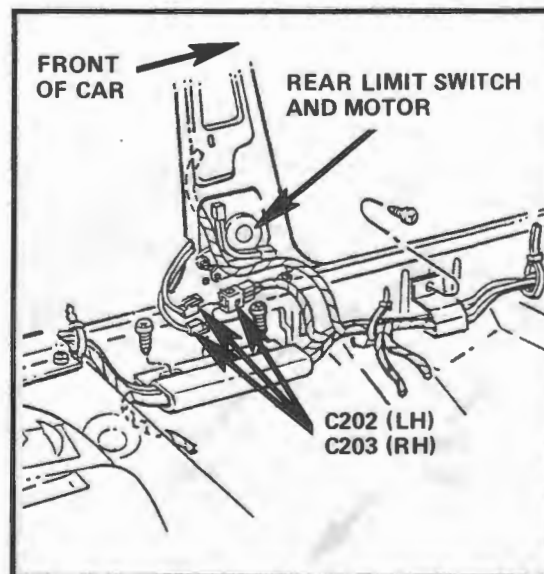


Figure 3 - Base of LH "B" Pillar
(RH Similar)

151-17 COMPONENT LOCATION VIEWS

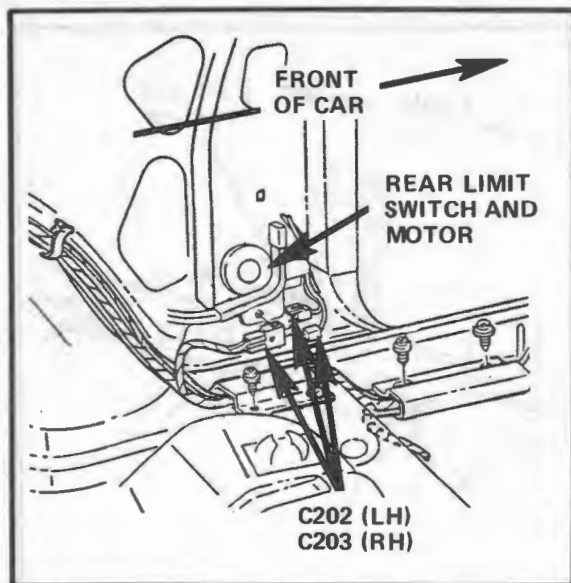


Figure 1 - LH Rear Quarter Panel
(RH Similar)

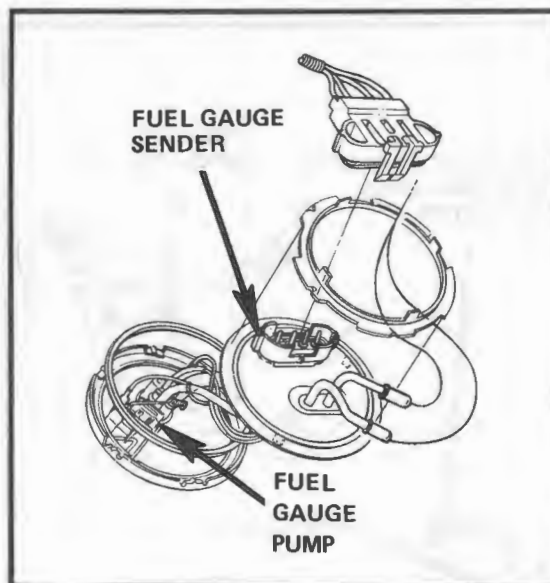


Figure 3 - Under Rear of Car, on
Top of Fuel Tank

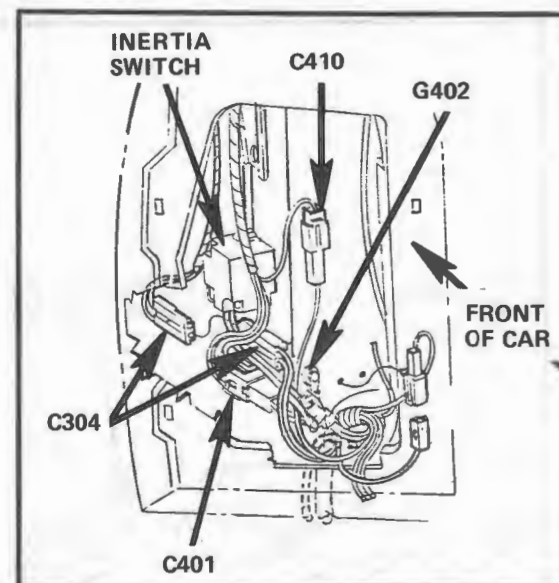


Figure 5 - LH Rear of Cargo Area

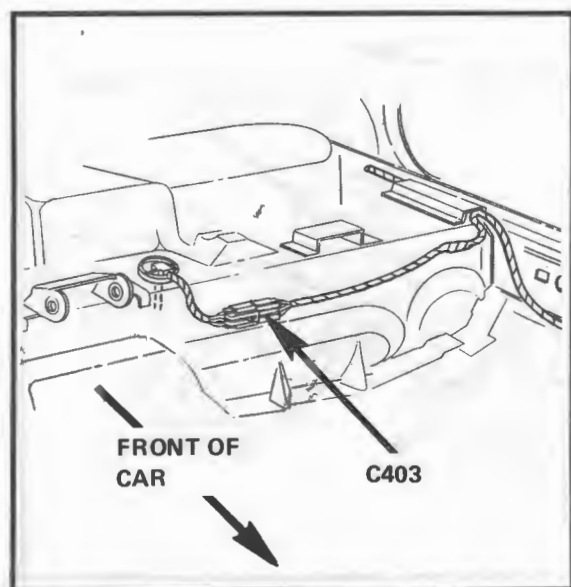


Figure 2 - Below LH Side of Rear Seat

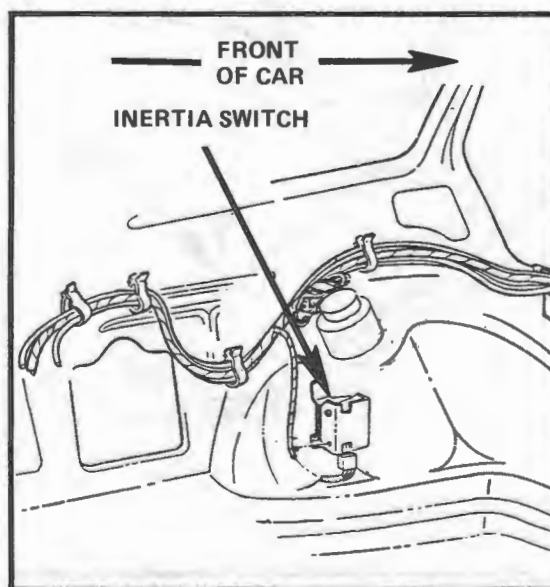


Figure 4 - LH Side of Cargo Area
(Sedan Shown; Coupe Similar)

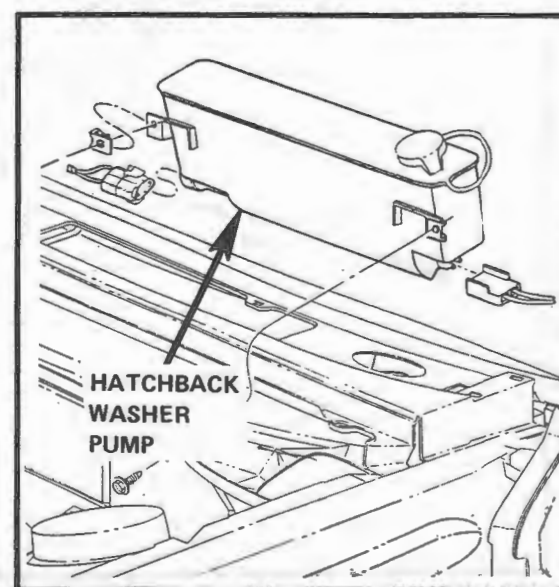


Figure 6 - LH Rear Corner of Hatchback

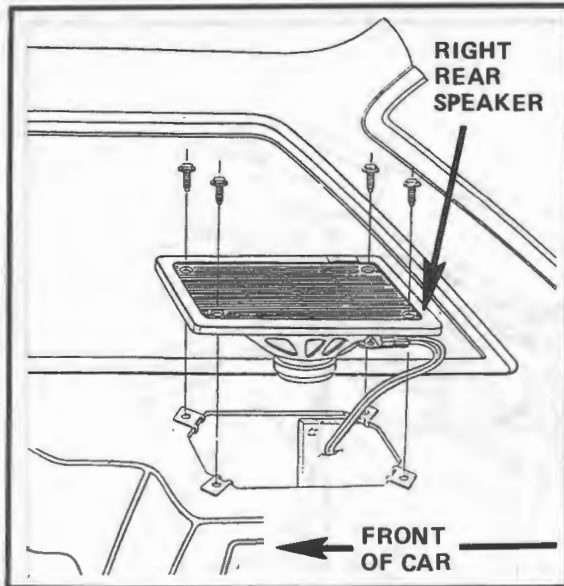


Figure 1 - RH Side of Cargo Area

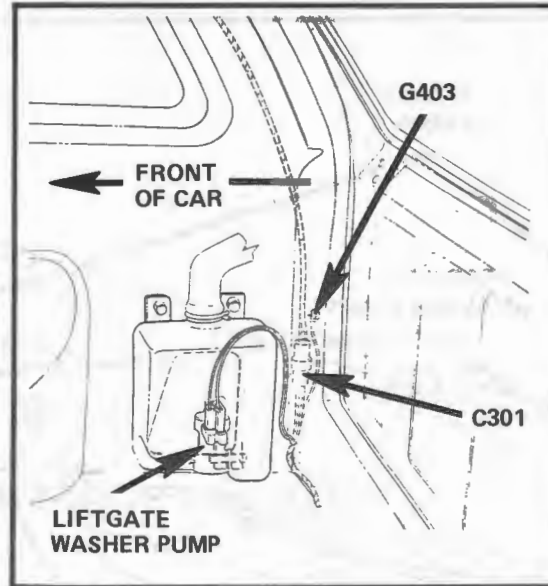


Figure 3 - RH Rear of Wagon

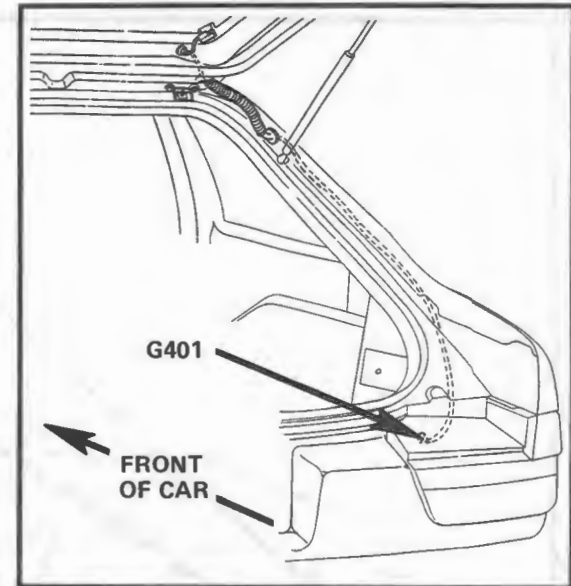


Figure 5 - Rear of Sedan

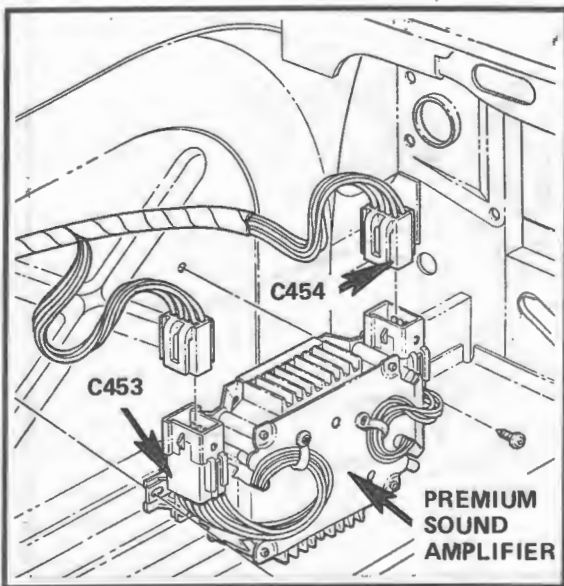


Figure 2 - RH Side of Cargo Area

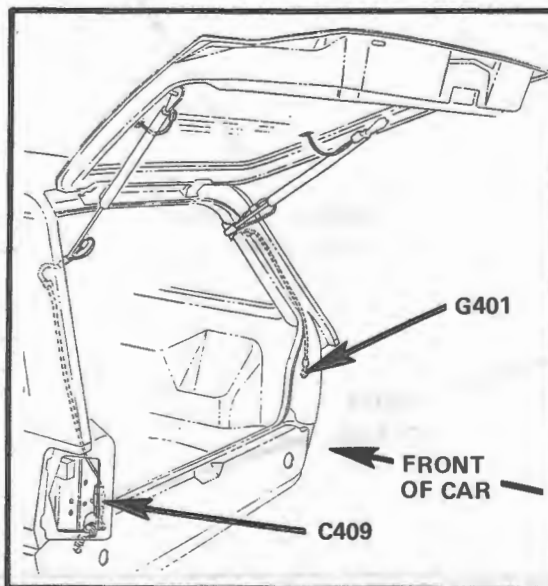


Figure 4 - Rear of Wagon

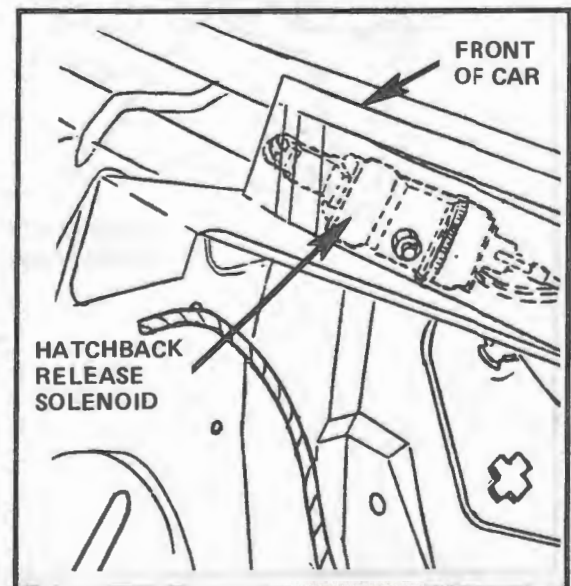


Figure 6 - RH Rear of Cargo Area

151-19 COMPONENT LOCATION VIEWS

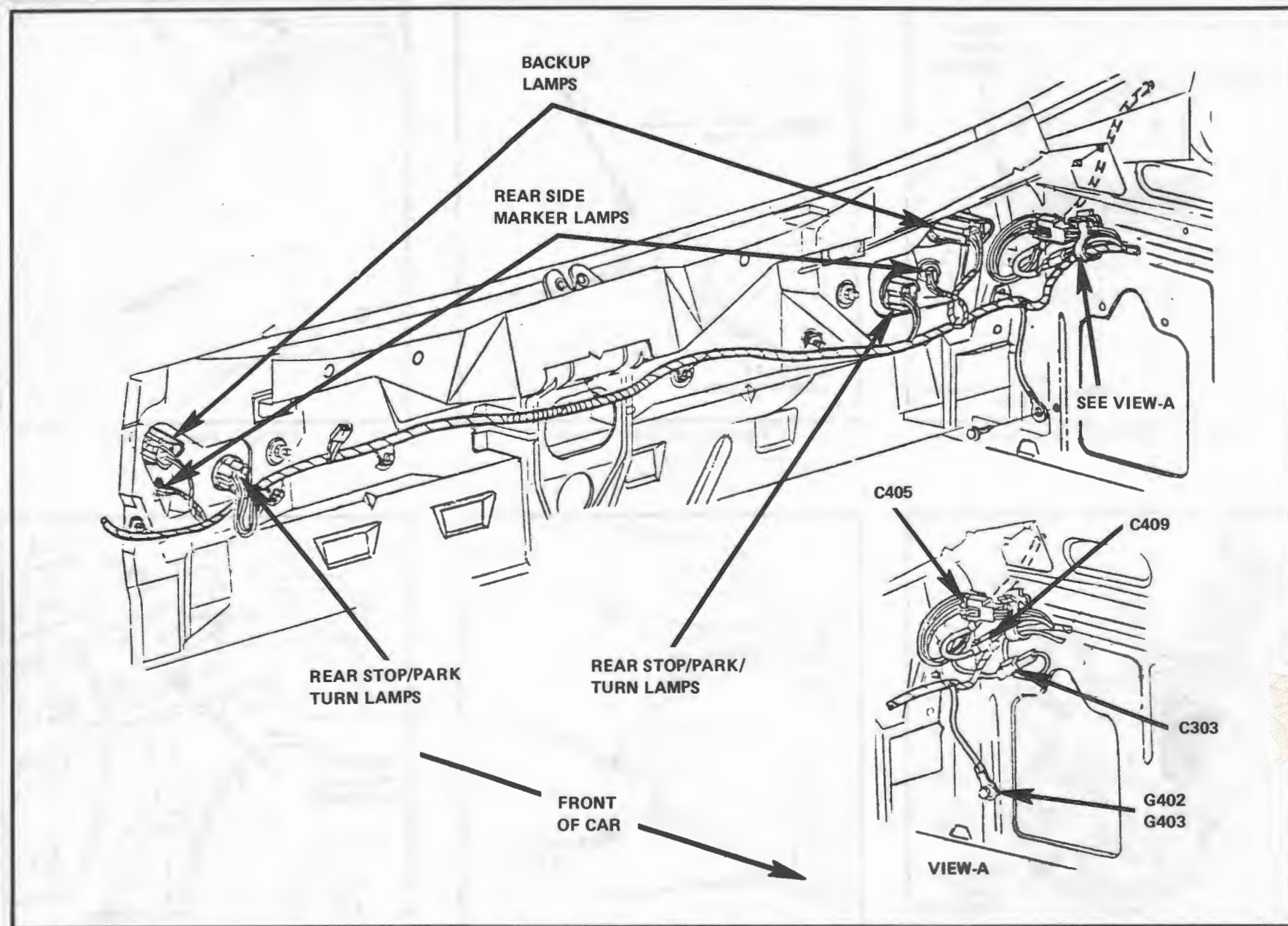


Figure 1 - Rear of Cargo Area (Coupe and Sedan Shown; Wagon Similar)

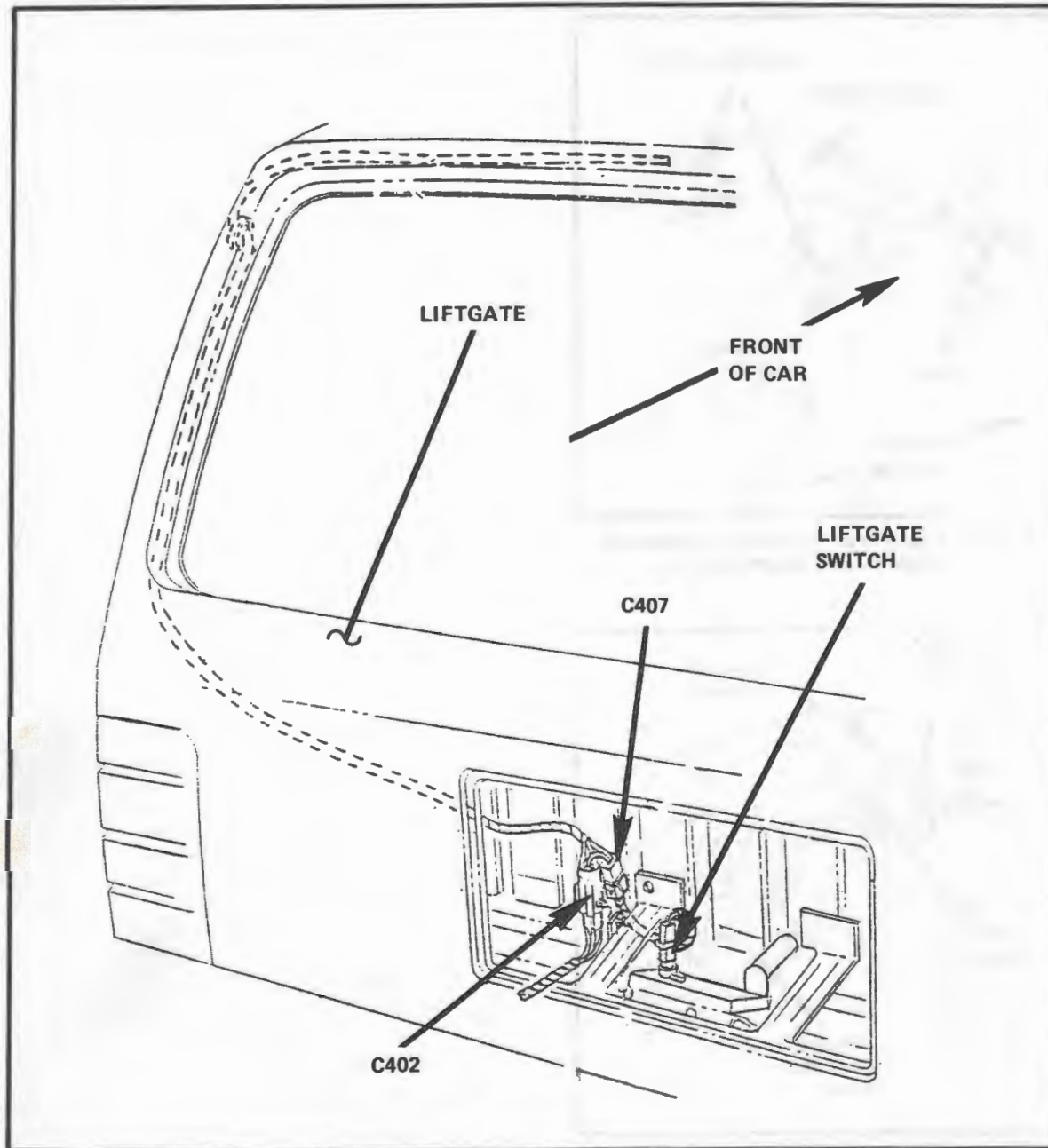


Figure 1 - Rear of Wagon

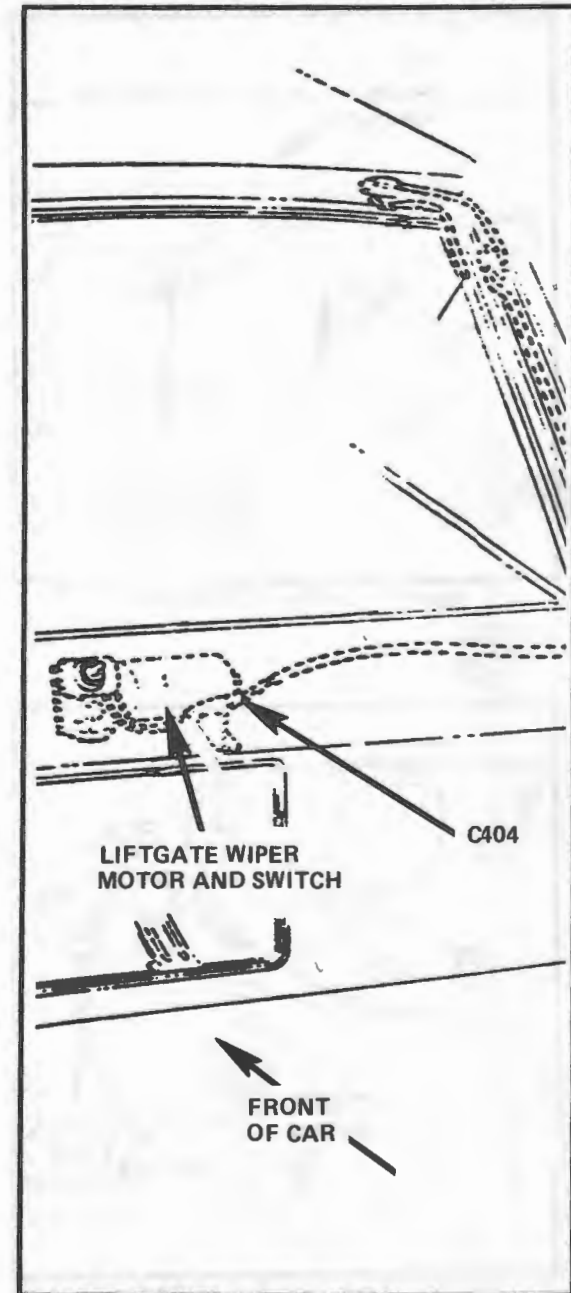


Figure 2 - RH Side of Liftgate

151-21 COMPONENT LOCATION VIEWS

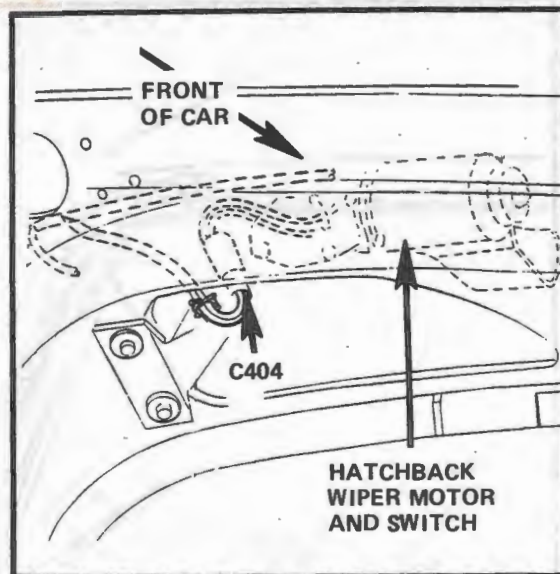


Figure 1 - LH Rear of Hatchback

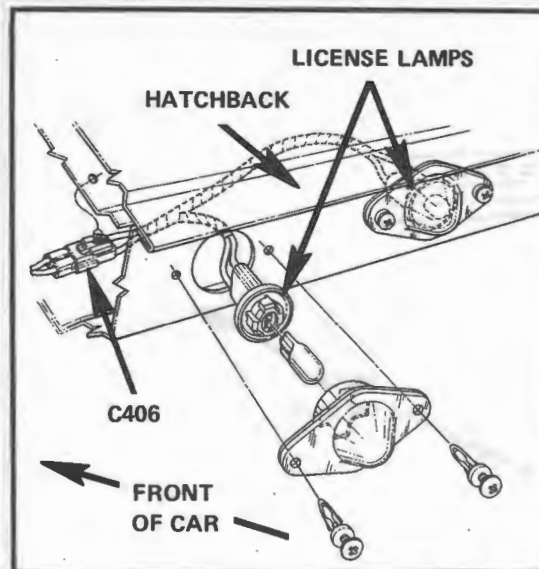


Figure 3 - Center Rear of Hatchback (Coupe and Sedan Shown; Wagon Similar)

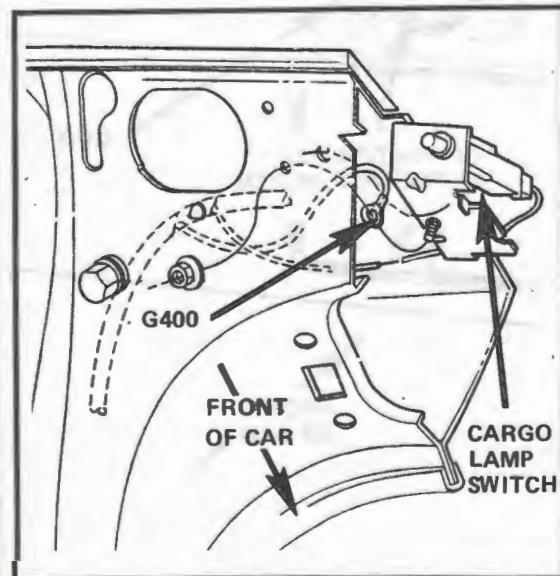


Figure 2 - LH Rear Corner of Hatchback

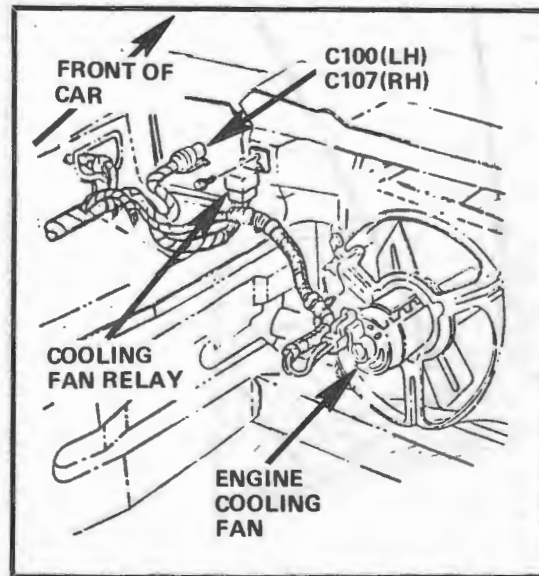


Figure 4 - Front of Engine Compartment

NOTES 151-22

152-1 LOCATION INDEX

| <u>Base
Harness
Number</u> | <u>Harness
Name</u> | <u>Major
Systems</u> |
|------------------------------------|---------------------------------|------------------------------|
| 6B018 | Engine Block Heater | Engine Block Heater |
| 9A400 | Fuel Pump Feed | Fuel Pump and Sender |
| 9A840 | Speed Control | Speed Control |
| 9D930 | Fuel Charge | Engine Sensors And Injectors |
| 10B954 | Door Open Warning | Warning Indicator |
| 12A581 | Engine Control Sensor | Electronic Engine Control |
| 13A623 | Rear High Mount Lamp | Exterior Lights |
| 13A412 | License Lamps | Exterior Lamps |
| 13A623 | Rear High Mount Lamp | Exterior Lamps |
| 13A710 | Rear Interior Lamp | Courtesy Lamps |
| 13B712 | Courtesy Lamp Jumper | Courtesy Lamps |
| 14A318 | Accessory Feed | Cigar Lighter |
| | | Instrument Illumination |
| 14289 | Dash Panel To Engine Gauge Feed | Engine Control Sensors |
| 14354 | Interior Lamps | Clock |
| | | Courtesy Lamps |
| 14522 | Warning Lamp | Warning Indicators |
| 14401 | Main | Start/Ignition |
| | | Charge/Power Distribution |
| | | Horns |
| | | Fuse Panel |
| | | Speed Control |
| | | Air Bags |
| | | Warning Chime |
| | | Instrument Illumination |
| | | Warning Indicators |
| | | Instrument Cluster |
| | | Passive Restraints |
| | | Radio |
| | | Lamp Out Warning |
| | | Turn/Stop/Hazard Lamps |
| | | Windshield Wiper/Washer |
| | | Rear Window Defrost |

LOCATION INDEX 152-2

Base Harness Number

Harness Name

Major Systems

14405 Rear Lamp

Exterior Lamps
Backup Lamps
Fuel Door Release
Turn/Stop/Hazard lamps
Fuel System
Passive Restraints
Radio

15A702 Engine Compartment Lamp Feed

Trunk Release
Rear Window Defrost
Courtesy Lamps
Warning Indicators

17A413 Rear Window Window Wiper Motor Feed

Rear Window Wiper/Washer

18C619 Back Window Heater Feed

Rear Window Defrost

18C620 Back Window Heater Ground

Rear Window Defrost

19A041 Radio Speaker

Warning Indicators

19A044 Radio Speaker Front Lit

Power Mirror

19A123 Radio Speaker Extension

Radio
Warning Indicators
Radio

152-3 LOCATION INDEX

| <u>Component</u> | <u>Base
Part No.</u> | <u>Location</u> | <u>Page
Figure</u> | <u>Connector
Page</u> |
|---|--------------------------|--|------------------------|---------------------------|
| A/C Controller | 19980 | Behind RH side of I/P, above glove box | 151- 14-3 | .. 150- 1 |
| A/C Clutch Diode | 19B618 | RH side of engine, taped in harness | * | |
| A/C Clutch Field Coil | 19D629 | RH side of engine, part of compressor
assembly | 151- 4-2 | |
| A/C Clutch Pressure Switch | 12A522 | Rear of engine compartment, attached to
accumulator/dryer | 151- 4-2 | |
| Air Charge Temperature Sensor | 12A697 | Top RH rear of engine | 151- 6-1 | |
| Alternator | 10300 | RH front side of engine | 151- 4-3 | |
| Backup Lamp Switch | 15520 | Lower LH front of manual transaxle assembly ... | 151- 2-1 | |
| Backup/Neutral Safety Switch | 7A247 | RH side of automatic transaxle assembly | 151- 2-3 | |
| Blower Motor (with A/C) | 19805 | Behind RH side of I/P, in heater and duct
assembly | 151- 14-4 | |
| Blower Motor (without A/C) | 18527 | Behind RH side of I/P, in heater and duct
assembly | 151- 14-4 | |
| Blower Motor Resistor | | Behind RH side of I/P, in heater and duct
assembly | 151- 14-4 | .. 150- 1 |
| Blower Switch (with A/C) | 19A642 | Behind center of I/P | 151- 14-1 | .. 150- 1 |
| Blower Switch (without A/C) | 18578 | Behind center of I/P | 151- 14-1 | .. 150- 1 |
| Canister Purge Solenoid | 9C915 | LH side of engine, above transaxle | 151- 6-1 | |
| Cargo Lamp Switch | 15N562 | LH rear of hatchback | 151- 21-2 | |
| Clutch Interrupt Switch | 11A152 | Behind LH side of I/P, top of clutch
pedal support | 151- 10-1 | |
| Clutch Switch | 12B537 | Behind LH side of I/P, on clutch pedal support .. | 151- 10-1 | |
| Coolant Temperature Sender | 10884 | LH rear of engine | 151- 7-1 | |
| Coolant Temperature Switch | 10B843 | LH rear of engine | 151- 6-1 | |
| Cooling Fan Relay | 8B658 | LH front corner of engine compartment,
near left headlamp | 151- 3-6 | .. 150- 2 |
| Cooling Fan Temperature
Switch (CFI) | 8B607 | Upper LH side of engine, near distributor | 151- 6-1 | |
| Cooling Fan Temperature
Switch (EFI) | 8B607 | Upper LH side of engine, near distributor | 151- 2-1 | |
| Cooling Fan Test Connector C117 | | LH rear of engine compartment | 151- 1-1 | |

* No Figure Available

LOCATION INDEX 152-4

| <u>Component</u> | <u>Base
Part No.</u> | <u>Location</u> | <u>Page
Figure</u> | <u>Connector
Page</u> |
|--|--------------------------|--|------------------------|---------------------------|
| Daytime Running Lamps | | | | |
| (DRL) Module | 15A272 | Lower RH front of engine compartment | 151- 5-1 .. | 150- 2 |
| Cooling Fan Test Connector C116 | | LH rear of engine compartment | 151- 1-1 | |
| DC Motor Idle Speed Control | 9L513 | Upper RH rear of engine | 151- 6-1 | |
| Door Ajar Switches | 14018 | Top rear of respective doors, in door latch
assemblies | 151- 15-3 | |
| Door Ajar Warning Lamp Module | | Behind LH side of I/P | 151- 12-1 .. | 150- 2 |
| Dual Brake Warning Switch | 2B264 | LH rear of engine compartment, on brake
master cylinder | 151- 1-1 | |
| EEC Power Relay | 12A646 | Behind LH side of I/P | 151- 10-3 .. | 150- 2 |
| EGR Solenoid | 9D475 | LH rear of engine compartment,
behind shock tower | 151- 1-1 | |
| EGR Valve Position Sensor | 9J460 | Upper LH rear of engine | 151- 6-1 | |
| Electronic Engine Control | | | | |
| (EEC) Module | 12A650 | Behind LH side of I/P | 151- 10-1 .. | 150- 3 |
| Emergency Release Lever Switches | | Beneath console, on bottom of emergency
brake lever | 151- 16-1 | |
| Engine Coolant Temperature Sensor | | | | |
| (CFI) | 12A648 | LH rear of engine | 151- 6-1 | |
| Engine Coolant Temperature Sensor | | | | |
| (EFI) | 12A648 | LH rear of engine | 151- 7-1 | |
| Engine Cooling Fan | 8600 | Center front engine compartment,
behind radiator | 151- 3-6 | |
| Engine Idle Air Bypass Solenoid | 9F715 | Top LH side of engine | 151- 2-1 | |
| Front Limit Switches | | In respective front roof pillars | 151- 8-2 | |
| Fuel Pump | 9H307 | Below rear of car, inside fuel tank | 151- 17-3 | |
| Fuel Gauge Sender | 9H307 | Below rear of car, top of fuel tank | 151- 17-3 | |
| Fuel Injector | 9F593 | Top rear of engine | 151- 6-1 | |
| Fuel Injectors | 9F593 | In intake manifold | 151- 7-1 | |
| Fuel Pump Relay | 9C392 | Behind LH side of I/P | 151- 10-3 .. | 150- 7 |
| Fuse Link A | 14526 | LH rear of engine compartment,
near starter relay | 151- 1-1 | |

* No Figure Available

152-5 LOCATION INDEX

| <u>Component</u> | <u>Base
Part No.</u> | <u>Location</u> | <u>Page
Figure</u> | <u>Connector
Page</u> |
|--------------------------------------|--------------------------|--|------------------------|---------------------------|
| Fuse Link B | 14526 | LH rear of engine compartment,
near starter relay | 151- 1-1 | |
| Fuse Link C | 14526 | LH rear of engine compartment,
near starter relay | 151- 1-1 | |
| Fuse Link D | 14526 | LH rear of engine compartment,
near starter relay | 151- 1-1 | |
| Fuse Link E | 14526 | LH rear of engine compartment,
near starter relay | 151- 1-1 | |
| Fuse Link F | 14526 | LH rear of engine compartment,
near starter relay | 151- 1-1 | |
| Fuse Link G | 14526 | LH side of engine compartment, in T/O to C105 . | 151- 1-1 | |
| Fuse Link H | 14526 | LH rear of engine compartment,
near starter relay | 151- 1-1 | |
| Fuse Link J | 14526 | LH rear of engine compartment, in T/O to C105 . | 151- 1-1 | |
| Fuse Link K | 14526 | LH rear of engine compartment,
near shock tower | 151- 1-1 | |
| Fuse Link X | 14526 | LH rear of engine compartment | 151- 1-4 | |
| Fuse Panel | 14A068 | Behind LH side of I/P | 151- 11-1 | |
| Graphic Display Module | 10D890 | Center of console | * | |
| Hatchback Release Solenoid | 14030 | Center rear of hatchback | 151- 18-6 | |
| Hatchback Washer Pump | 17B651 | LH rear corner of cargo area,
in hatchback washer fluid reservoir | 151- 17-6 | |
| Hatchback Wiper Motor And Switch ... | 17K400 | Inside LH rear of hatchback | 151- 21-1 | |
| Hazard Flasher | 13350 | Behind LH side of I/P, rear of fuse panel | 151- 11-2 | |
| HEGO Sensor | 9F472 | Front of engine, in exhaust manifold | 151- 2-1 | |
| High Pitch Horn | 13A803 | Inside front of RH fender well | 151- 4-1 | |
| Horn Relay | 13853 | Behind LH side of I/P, RH side of
steering column | 151- 9-1 .. 150- 2 | |
| Ignition Coil | 11082 | LH side of engine compartment | 151- 1-1 | |
| Ignition Key Warning Switch | 11A127 | Top RH side of steering column, part of
ignition switch | 151- 13-1 | |
| Ignition Suppression Resistor | 10C346 | Center LH rear of engine compartment,
taped in engine harness | 151- 1-4 | |

* No Figure Available

LOCATION INDEX 152-6

| <u>Component</u> | <u>Base
Part No.</u> | <u>Location</u> | <u>Page
Figure</u> | <u>Connector
Page</u> |
|--|--------------------------|---|------------------------|---------------------------|
| Ignition Switch | 11572 | Top RH side of steering column | 151- 13-1 | .. 150- 9 |
| Inertia Switch (3 Door) (5 Door) | 9341 | LH side of cargo area | 151- 17-4 | .. 150- 9 |
| Inertia Switch (Wagon) | 9341 | LH rear corner of cargo area, behind LH stop
lamp assembly | 151- 17-5 | .. 150- 9 |
| Instrument Cluster | 10K843 | LH side of I/P | 151- 11-6 | .. 150- 8 |
| Interval Governor | 17C476 | Attached to RH side of steering column brace .. | 151- 11-4 | |
| Liftgate Switch | 10C872 | Center bottom of liftgate | 151- 20-1 | |
| Liftgate Washer Pump | 17B651 | RH rear corner of cargo area | 151- 18-3 | |
| Liftgate Wiper Motor And Switch | 17K400 | Inside center rear of liftgate | 151- 20-2 | |
| Liftgate/Hatchback Circuit Breaker | 14526 | Behind LH side of I/P, near rear of
instrument cluster | 151- 8-3 | |
| Low Coolant Switch | 10D968 | RH side of engine compartment, in coolant
overflow reservoir | 151- 4-4 | |
| Low Fuel Warning Module | 9F326 | Below center of console, near graphic
display module | * .. | 150- 7 |
| Low Pitch Horn | 13802 | Inside front of RH fender well | 151- 4-1 | |
| Low Washer Fluid Level Switch | 17664 | LH side of safety wall, bottom LH side of
washer fluid reservoir | 151- 1-2 | |
| Main Light Switch | 11654 | Behind LH side of I/P | 151- 8-3 | .. 150- 9 |
| Manifold Absolute Pressure (MAP)
Sensor | 9F479 | RH side of engine compartment, on shock tower | 151- 5-1 | |
| Multi-function Switch | 13K359 | Top LH side of steering column | 151- 13-1 | .. 150- 10 |
| Neutral Switch | 7G072 | Lower LH side of manual transaxle | 151- 2-2 | |
| Oil Pressure Switch | | Rear of engine, near oil filter | 151- 7-1 | |
| Parking Brake Switch | 15852 | Below rear of console, on parking brake
assembly | 151- 16-1 | |
| Passive Restraint Module | 14A679 | Behind LH side of I/P, RH side of steering
column | 151- 12-1 | .. 150- 11 |
| Premium Sound Amplifier | 18B849 | RH rear side of cargo area | 151- 18-2 | .. 150- 14 |
| Rear Limit Switches And Motors
(3 Door) | | Inside respective rear quarter panels,
front of wheel wells | 151- 17-1 | |

* No Figure Available

152-7 LOCATION INDEX

| <u>Component</u> | <u>Base
Part No.</u> | <u>Location</u> | <u>Page
Figure</u> | <u>Connector
Page</u> |
|--------------------------------------|--------------------------|--|------------------------|---------------------------|
| Rear Limit Switches And Motors | | | | |
| (5 Door) (Wagon) | 14A011 | At base of respective "B" pillars | 151- 16-3 | |
| Rear Window Defrost Switch | 19A328 | LH side of I/P | 151- 11-5 | .. 150- 15 |
| Seat Belt Switch | 10B924 | Inside driver's seat belt buckle | 151- 16-1 | |
| Shift Indicator Dimmer Relay | 7G080 | Behind RH side of I/P | 151- 13-3 | .. 150- 15 |
| Shorting Plug | 12B588 | LH side of engine | 151- 6-1 | |
| Speed Control Amplifier | 9D843 | Behind LH side of I/P, under steering column ... | 151- 9-1 | .. 150- 15 |
| Speed Control Servo | 9C735 | LH side of engine compartment,
near shock tower | 151- 1-3 | .. 150- 16 |
| Start Diode | 10374 | Under LH side of I/P, near dash grommet
to engine | 151- 9-3 | |
| Starter Motor | 11002 | Lower LH front of engine | 151- 3-5 | |
| Starter Relay | 11433 | At LH fender apron, in front of shock tower | 151- 1-1 | |
| Stop Lamp Switch | 13480 | Behind LH side of I/P, top of brake
pedal support | 151- 9-2 | |
| TFI Ignition Module | | LH side of engine, on RH rear side of
distributor | 151- 6-1 | .. 150- 16 |
| Throttle Position Sensor | 9B989 | Top LH rear of engine | 151- 7-1 | |
| Top Gear Switch | | Rear of transaxle | 151- 7-1 | |
| Turn Signal Flasher | 13350 | Behind LH side of I/P, front of fuse panel | 151- 11-1 | |
| Vacuum Dump Valve | 9E802 | Behind LH side of I/P, top of brake
pedal support | 151- 10-2 | |
| Vane Air Flow Meter | | LH side of engine compartment,
near starter relay | 151- 1-3 | |
| Vehicle Speed Sensor | 9E731 | On LH rear of transaxle | 151- 3-1 | |
| VIP Test Connector C1984 | | RH side of engine compartment | 151- 5-1 | |
| VIP Test Connector C1985 | | RH side of engine compartment | 151- 5-1 | |
| Warning Chime Module | 10D840 | Behind RH side of I/P, LH side of glove box | 151- 12-1 | .. 150- 16 |
| Washer Pump | 17B613 | LH side of safety wall, on bottom RH side of
washer fluid reservoir | 151- 1-2 | |
| Windshield Wiper/Washer Switch | 17A553 | Top of steering column | 151- 13-1 | .. 150- 16 |
| Wiper Motor And Switch | 17504 | RH front of safety wall | 151- 4-5 | |

* No Figure Available

LOCATION INDEX 152-8

| <u>Connector</u> | <u>Location</u> | <u>Page Figure</u> | <u>Connector Page</u> | <u>Color</u> | <u>Terminal</u> |
|-----------------------|---|--------------------|-----------------------|--------------|-----------------|
| C100 | LH front of engine compartment, near left headlamp | 151- 3-4 | | | |
| C101 | LH side of engine compartment | 151- 1-1 | | GY | 8 |
| C102 | RH front of engine compartment, near alternator | 151- 4-3 | | GY | 2 |
| C103 | RH side of radiator support | 151- 3-3 | | BK | 2 |
| C104 | LH side of radiator support | 151- 3-3 | | BK | 2 |
| C105 | LH rear of engine compartment | 151- 1-1 | | BK | 8 |
| C106 | LH front of engine, near exhaust manifold | 151- 2-1 | | BK | 4 |
| C107 | RH front of engine compartment, near right headlamp | 151- 3-4 | | BK | 2 |
| C108 | Front LH side of engine compartment | * | | N | 4 |
| C109 | LH side of engine compartment | 151- 1-4 | | BK | 8 |
| C110 | LH side of engine compartment | 151- 1-4 | | BK | 8 |
| C111 | Top rear of engine | 151- 6-1 | | GY | 4 |
| C112 | LH front of engine compartment, forward of battery | 151- 3-2 | | BK | 1 |
| C113 | LH side of engine compartment | 151- 1-1 | | BK | 2 |
| C114 | RH rear of engine compartment, behind shock tower | 151- 5-1 | | BK | 8 |
| C115 | LH rear of engine compartment | 151- 1-4 | | GY | 8 |
| C118 | RH front of safety wall | 151- 4-5 | | GY | 4 |
| C120 | LH rear of engine compartment | 151- 1-5 | | GY | 1 |
| C121 | LH rear of engine compartment | 151- 1-1 | | GY | 4 |
| C153 | RH front of engine, on alternator | 151- 4-3 | | BK | 3 |
| C154 | RH front of engine, on alternator | 151- 4-3 | | BK | 3 |
| C200 | At RH kick panel | 151-14-5 | | | |
| C202 (3 Door) | LH rear quarter panel, front of wheel well | 151-17-1 | | | |
| C202 (5 Door) (Wagon) | Inside base of LH "B" pillar | 151-16-3 | | | |
| C203 (3 Door) | LH rear quarter panel, front of wheel well | 151-17-1 | | | |
| C203 (5 Door) (Wagon) | Inside base of RH "B" pillar | 151-16-3 | | | |
| C204 | Behind LH side of I/P, behind fuse panel | 151-12-1 | | GY | 8 |
| C205 | Inside LH "A" pillar | 151- 8-2 | | GY | 2 |
| C206 | Behind LH side of I/P | 151-12-1 | | BK | 2 |
| C207 | Behind LH side of I/P, RH side of steering column | 151-12-1 | | BR | 2 |
| C208 | Below console, on graphic display module | * | | GY | 8 |
| C209 | Below console, on graphic display module | * | | GY | 8 |

* No Figure Available

152-9 LOCATION INDEX

| Connector | Location | Page Figure | Connector Page | Color | Terminal |
|-------------------------------|--|-------------|----------------|-------|----------|
| C210 | Behind LH kick panel | 151- 8-1 | | GY | 3 |
| C211 | Behind center of I/P, on A/C-heater control assembly | 151- 14-1 | | GY | 4 |
| C212 | Behind LH side of I/P | 151- 12-1 | | GY | 12 |
| C213 | Behind LH kick panel | 151- 8-1 | | GY | 4 |
| C214 | Behind LH side of I/P | 151- 12-1 | | GY | 4 |
| C215 | Behind LH side of I/P | 151- 12-1 | | GY | 8 |
| C216 | Behind LH side of I/P, RH side of steering column | 151- 12-1 | | Y | 3 |
| C217 | Behind LH kick panel | 151- 8-1 | | GY | 3 |
| C218 | Behind LH kick panel | 151- 8-1 | | BK | 4 |
| C219 | RH side of engine compartment | 151- 5-1 | | GY | 2 |
| C220 | Behind LH kick panel | 151- 8-1 | | BR | 6 |
| C221 | Behind LH side of I/P, on speed control amplifier | 151- 9-1 | .. 150-15 | GY | 6 |
| C222 | Behind LH side of I/P, on speed control amplifier | 151- 9-1 | .. 150-15 | W | 8 |
| C223 | Behind LH side of I/P, above clutch pedal support | 151- 10-1 | | GY | 2 |
| C224 | Behind LH side of I/P, near stop lamp switch | 151- 9-2 | | GY | 8 |
| C225 | Behind LH side of I/P | 151- 9-1 | | GY | 3 |
| C226 | Behind LH side of I/P | 151- 12-1 | | | |
| C227 | Behind LH side of I/P | 151- 9-1 | | BR | 1 |
| C228 | Behind LH side of I/P, near stop lamp switch | 151- 9-3 | | BK | 2 |
| C229 | Inside top of steering column | 151- 13-1 | | GY | 1 |
| C230 | Inside RH "A" pillar | 151- 8-2 | | GY | 2 |
| C232 (with Interval Wiper) | Behind LH side of I/P | 151- 11-3 | | GY | 2 |
| C232 (without Interval Wiper) | Behind LH side of I/P, near windshield wiper/washer switch | 151- 13-1 | | GY | 6 |
| C233 | Base of RH "B" pillar | 151- 16-2 | | GY | 2 |
| C234 | Base of LH "B" pillar | 151- 16-2 | | GY | 2 |
| C235 | Below console, on graphic display module | * | | BR | 6 |
| C236 | Inside RH kick panel | 151- 14-5 | | GY | 3 |
| C237 | Behind RH side of I/P | 151- 12-1 | | | |
| C238 | Behind center of I/P, on radio | 151- 14-2 | .. 150-13 | BK | 8 |
| C239 | Behind RH kick panel | 151- 14-5 | | GY | 8 |
| C240 | Behind center of I/P, on radio | 151- 14-2 | .. 150-13 | BK | 8 |
| C241 | Behind RH kick panel | 151- 14-5 | | GY | 8 |

* No Figure Available

LOCATION INDEX 152-10

| Connector | Location | Page Figure | Connector Page | Color | Terminal |
|------------------------------|--|-------------|----------------|-------|----------|
| C243 | Behind LH side of I/P | 151- 8-3 | | BR | 8 |
| C244 | Behind LH kick panel | 151- 8-1 | | GR | 6 |
| C245 | Behind LH side of I/P | * | | | |
| C251 | Behind LH side of I/P, on rear of instrument cluster | 151- 11-6 | .. 150- 8 | GY | 18 |
| C257 (with Premium Sound) | Behind center of I/P, near radio | 151- 13-2 | | BK | 8 |
| C257 (without Premium Sound) | Behind center of I/P, on radio | 151- 14-2 | .. 150-12 | BK | 8 |
| C258 (with Premium Sound) | Behind center of I/P, near radio | 151- 13-2 | | BK | 8 |
| C258 (without Premium Sound) | Behind center of I/P, on radio | 151- 14-2 | .. 150-12 | BK | 8 |
| C262 | Behind LH side of I/P, on main switch | 151- 8-3 | .. 150- 9 | GY | 9 |
| C268 | Inside top of steering column, on multi-function switch | 151- 13-1 | .. 150-10 | GY | 7 |
| C269 | Inside top of steering column, on multi-function switch | 151- 13-1 | .. 150-10 | GY | 6 |
| C278 | Behind LH side of I/P, on passive restraint module | 151- 12-1 | .. 150-11 | N | 13 |
| C279 | Behind LH side of I/P, on passive restraint module | 151- 12-1 | .. 150-11 | N | 13 |
| C300 | Below driver's seat assembly | 151- 16-1 | | | |
| C301 | RH rear corner of cargo area | 151- 18-3 | | GY | 3 |
| C302 | Behind LH side of I/P, behind fuse panel | 151- 12-1 | | BL | 1 |
| C303 | LH rear corner of cargo area | 151- 19-1 | | BL | 1 |
| C304 | LH rear corner of cargo area | 151- 17-5 | | GY | 2 |
| C400 | Behind LH side of I/P, RH side of steering column | 151- 12-1 | | GY | 3 |
| C401 | LH rear corner of cargo area | 151- 17-5 | | | |
| C402 | Center rear of liftgate | 151- 20-1 | | GY | 3 |
| C403 | Below LH side of rear seat | 151- 17-2 | | GY | 4 |
| C404 (3 Door) (5 Door) | LH rear corner of hatchback | 151- 21-1 | | GY | 3 |
| C404 (Wagon) | Center rear of liftgate | 151- 20-2 | | GY | 3 |
| C405 | LH rear corner of cargo area | 151- 19-1 | | GY | 4 |
| C406 | Center rear of hatchback | 151- 21-3 | | GY | 2 |
| C407 | Center rear of liftgate | 151- 20-1 | | GY | 2 |
| C409 (5 Door) | LH rear corner of cargo area, near left stop lamp assembly | 151- 19-1 | | BR | 1 |
| C409 (Wagon) | LH rear corner of cargo area, near left stop lamp assembly | 151- 18-4 | | BR | 1 |
| C410 | LH rear corner of cargo area | 151- 17-5 | | BL | 1 |
| C453 | RH rear side of cargo area, on premium sound amplifier | 151- 18-2 | .. 150-14 | GY | 8 |
| C454 | RH rear side of cargo area, on premium sound amplifier | 151- 18-2 | .. 150-14 | GY | 8 |

* No Figure Available

152-11 LOCATION INDEX

| <u>Connector</u> | <u>Location</u> | <u>Page Figure</u> | <u>Connector Page</u> | <u>Color</u> | <u>Terminal</u> |
|------------------|--|--------------------|-----------------------|--------------|-----------------|
| C501 | Inside LH front door, near power mirror switch | * | | GR | 8 |
| C502 | Top front of LH front door, near mirror | 151- 15-1 | | GY | 3 |
| C601 | Top front of RH front door, near mirror | 151- 15-1 | | GY | 3 |
| C731 | LH side of I/P | * | | W | 5 |

* No Figure Available

| <u>Ground</u> | <u>Location</u> | <u>Page Figure</u> |
|---------------|--|--------------------|
| G100 | At LH fender apron, behind battery | 151- 1-1 |
| G101 | RH fender apron, behind coolant overflow reservoir | 151- 5-1 |
| G102 | LH front of engine compartment, forward of battery | 151- 3-2 |
| G103 | LH front of engine, above starter motor | 151- 3-5 |
| G104 | LH front of engine, above exhaust manifold | 151- 2-1 |
| G105 | At LH shock tower | 151- 1-3 |
| G200 | Inside RH kick panel | 151- 14-5 |
| G201 | LH kick panel | 151- 8-1 |
| G202 | Behind center of I/P | * |
| G300 | Below driver's seat assembly, on crossmember | 151- 16-1 |
| G301 | Behind header console | * |
| G400 | LH rear corner of hatchback | 151- 21-2 |
| G401 (5 Door) | RH rear of cargo area, near right stop lamp assembly | 151- 18-5 |
| G401 (Wagon) | RH rear of cargo area, near right stop lamp assembly | 151- 18-4 |
| G402 | LH rear corner of cargo area | 151- 17-5 |
| G403 | RH rear corner of cargo area | 151- 18-3 |
| G500 | Inside LH front door | 151- 15-1 |
| G600 | Inside RH front door | 151- 15-1 |

* No Figure Available

| <u>Splice</u> | <u>Location</u> |
|---------------|--|
| S100 | Engine harness, near T/O to G100 |
| S101 | Air conditioner compressor clutch harness, near T/O to A/C clutch field coil |
| S102 | Engine harness, near T/O to G101 |
| S103 | Engine harness, in T/O to C153 |
| S104 | Engine harness, near T/O to C109 |
| S105 | Engine harness, at fuse link D |
| S106 | Engine harness, near T/O to C109 |
| S107 | Engine harness, near T/O to C101 |
| S108 | Dash panel to engine gauge feed harness, near T/O to G101 |
| S109 | Engine harness, at fuse link C |
| S110 | Engine harness, near T/O to starter relay |
| S111 | Engine harness, near battery |
| S112 | Engine harness, near T/O to manifold absolute pressure (MAP) sensor |
| S113 | Engine harness, near T/O to manifold absolute pressure (MAP) sensor |
| S114 | Fuel charge harness, near T/O to fuel injector no.1 |
| S115 | Fuel charge harness, near T/O to fuel injector no.1 |
| S116 | Fuel charge feed harness, near T/O to fuel injector no.1 |
| S117 | Fuel charge feed harness, near T/O to C114 |
| S118 | Engine harness, near T/O to G100 |
| S119 | Air conditioner compressor clutch harness, at T/O to A/C clutch field coil |
| S120 | Engine harness, near T/O to lower washer fluid switch |
| S121 | Engine harness, near T/O ignition suppression resistor |
| S122 | Engine harness, near T/O to ignition suppression resistor |
| S123 | Engine harness, near T/O to right headlamp |
| S124 | Engine harness, near T/O to EGR solenoid |
| S200 | Main harness, near T/O to right courtesy lamp switch |
| S201 | Main harness, near T/O to electronic radio |
| S202 | Rear lamp harness, near T/O to C213 |
| S203 | Main harness, near T/O to hatchback release switch |
| S204 | Main harness, near T/O to low coolant lamp connector |
| S205 | Main harness, near T/O to fuse panel |
| S206 | Main harness, near T/O to fuse panel |

152-13 LOCATION INDEX

| <u>Splice</u> | <u>Location</u> |
|---------------|---|
| S207 | Main harness, near T/O to ignition key warning switch |
| S208 | Main harness, near T/O to C206 |
| S209 | Main harness, near T/O to C206 |
| S210 | Main harness, near T/O to C207 |
| S211 | Main harness, near T/O to C206 |
| S212 | Engine harness, near T/O to fuel pump relay |
| S213 | Engine harness, near T/O to start diode |
| S214 | Rear lamp harness, in LH door sill |
| S215 | Engine harness, near T/O to fuel pump relay |
| S216 | Main harness, near T/O to fuse panel |
| S217 | Main harness, near T/O to low coolant lamp connector |
| S219 | Main harness, near T/O to low coolant lamp connector |
| S220 | Main harness, near T/O to low coolant lamp connector |
| S221 | Main harness, near T/O to horn switch |
| S222 | Main harness, near T/O to horn switch |
| S223 | Accessory feed harness, near T/O to console cigar lighter |
| S225 | Interior lamp feed harness, near T/O to left front courtesy lamp switch |
| S226 | Interior lamp feed harness, near T/O to G301 |
| S228 | Main harness, near T/O to C400 |
| S229 | Radio speaker jumper harness, near T/O to C257 |
| S230 | Rear lamp harness, near T/O to C212 |
| S231 | Rear lamp harness, near T/O to left rear limit switch and motor |
| S232 | Rear lamp harness, near T/O to LH rear speaker |
| S233 | Rear lamp harness, near T/O to C212 |
| S234 | Interior lamp feed harness, near T/O to left front courtesy lamp switch |
| S235 | Main harness, near T/O to low coolant lamp |
| S300 | Rear lamp harness, near T/O to G300 |
| S301 | Accessory feed harness, near T/O to console cigar lighter |
| S400 | Rear window wiper motor feed harness, near T/O to G400 |
| S401 | Rear lamp harness, near T/O to C405 |
| S402 | Rear lamp harness, near T/O to left rear stop/park turn lamp |
| S403 | Rear license lamp harness, near T/O to C402 |

LOCATION INDEX 152-14

Splice

Location

| | |
|------------|---|
| S404 | Rear lamp extension harness, near T/O to high mount stop lamp |
| S405 | Rear lamp harness, near T/O to left side marker lamp |
| S407 | Rear lamp harness, near T/O to hatchback release solenoid |
| S408 | Rear lamp harness, near T/O to C405 |
| S409 | Rear lamp harness, near T/O to right stop/park/turn lamp |

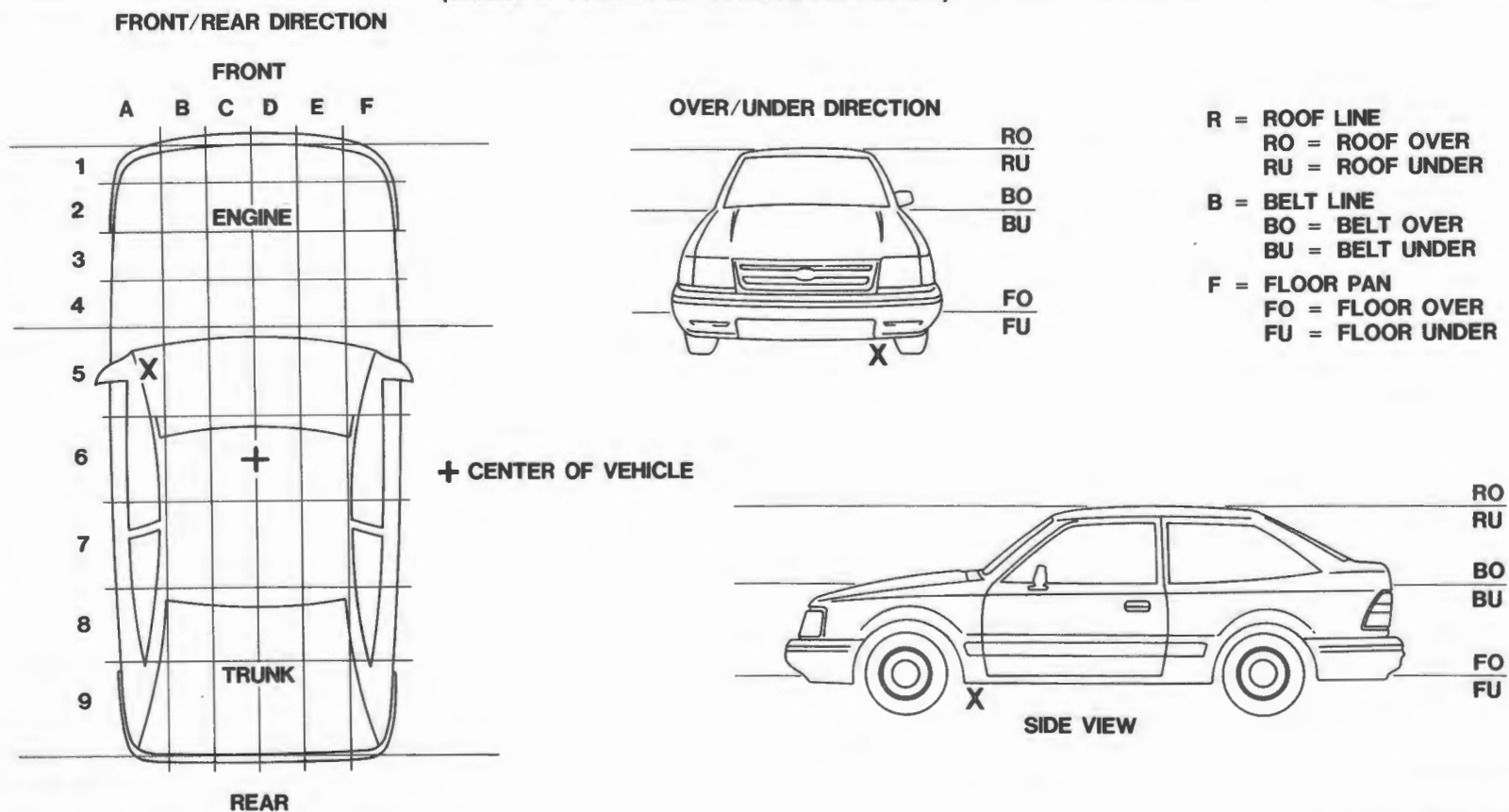
160-1 VEHICLE REPAIR LOCATION CODE

VEHICLE REPAIR LOCATION CODES

TO PINPOINT THE ACTUAL VEHICLE LOCATION OF A REPAIR, THE VEHICLE REPAIR LOCATION CODE IS REQUIRED.

FOR EXAMPLE, AN "X" HAS BEEN PLACED IN THE QUADRANT OF THE VEHICLE DIAGRAMS INDICATING THE LOCATION OF THE REPAIR. SEE DIAGRAMS.

LOCATION CODE, FOR THE EXAMPLE IS: A5/FU —
(UNDER THE FLOOR OF DRIVER'S LEFT FOOT.)



We Want To Hear from You!

Tell us about yourself

Are you a: ☐ Ford Trained Technician ☐ Independent Technician ☐ Customer
☐ Other _____

1. Which section of the EVTM do you use most frequently?

☐ Schematics ☐ Diagnostics ☐ Component Location Information

2. How often do you refer to this Ford Service Publication?

☐ For all electrical problems.
☐ For about 75% of electrical problems.
☐ Fewer than 25% of electrical problems.

3. Do the component location descriptions provide enough detail?

☐ Yes ☐ No

Suggestions: _____

4. Would you prefer to have the electrical information for one vehicle, in one publication (separate electrical publications for each vehicle)?

☐ Yes ☐ No

5. Are connector views and corresponding information helpful when diagnosing electrical problems?

☐ Yes ☐ No

6. Would you like to include more component switch test information?

☐ Yes ☐ No

7. Do you read the "How to Use this Manual" and "How to Find the Electrical Problems" sections of this manual?

☐ Yes ☐ No

What additional information would be helpful? _____

8. Rate the purpose for using the location index. (5 is high, 1 is low)

Connectors Splices Part Numbers Grounds

9. Are the full view, more comprehensive illustrations (located just prior to the Location Index) a helpful tool?

☐ Yes ☐ No

Comment: _____

10. Please rate the overall effectiveness of the revised radio schematics and diagnostics.

☐ Good ☐ Fair ☐ Poor

11. How helpful are the "equivalent circuits" of electrical components, as shown on schematics, when troubleshooting electrical circuits?

☐ Good ☐ Fair ☐ Poor

Overall Comments/Suggestions: _____

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